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AN ANALYSIS OF THE OPERATING EXPENDITURES OF THREE JUNIOR COLLEGES

by

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©

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Analysis of the Operating Expenditures of Three Junior Colleges," submitted by WILLIAM LAURENCE WORKMAN in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

The junior college in Alberta is becoming an increasingly important post-secondary institution in the fulfillment of the educational objectives held by individuals as well as those held by society at large. Perhaps understandably, it is becoming mandatory that some measure(s) be made of the financial resources being expended on education at the junior college level, in order to account for these expended resources as well as to form a basis upon which future expenditures might be made.

This study was made in an attempt to measure the expenditures of three junior colleges in Alberta. More specifically, a number of unit-costs were generated from the expenditures of each of Medicine Hat Junior College, Lethbridge Junior College, and Red Deer Junior College for the period September 1, 1968 to August 31, 1969, for specified (university entrance and transfer) programs. Under the methodology applied in the study, all direct costs (supplies, equipment, and instructional salaries) were attributed to courses; "per pupil" costs of courses were summed to the program level; implementary (overhead and supportive) costs were allocated to programs on a "per pupil" basis; and "per pupil" program costs were generated. These last unit-costs were compared arithmetically with revenue realized from fees and provincial grants. Finally, the sets of unit-costs generated for each junior college were compared with each other, and factors

associated with differences were identified.

The study found that variation in total per pupil expenditure did exist, with that unit-cost ranging through $985.24, $1,305.69 and $1,498.41, for the three Colleges included in this study. The primary factor responsible for this variation appeared to be the volume of implementary expenditure associated with each College. A second finding was that the degree to which fees and provincial grants offset operating expenditures varied among the Colleges, and among the programs offered by the Colleges; more specifically, the findings indicated that the subsidy effect ranged from virtually complete subsidization of one college's expenditures (Medicine Hat) to insufficient support for any of another college's program expenditures (Red Deer).

It was further concluded that, due to the variability of factors such as the distribution of instructors' workloads, allocated implementary expenses, and indirect expenditures, per pupil unit-costs are of limited usefulness and interpretation.

ACKNOWLEDGEMENTS

The writer wishes to acknowledge with gratitude the many contributions of his advisor, Dr. P. J. Atherton, and his committee members.

The contributions of Messrs. G. Reid, L. Wilson, and D. Woolf, Bursars of the participating junior colleges, are manifest throughout the study, inasmuch as these men gathered the data at the college level. Further acknowledgement is extended to the Board of Post-Secondary Education for the Province of Alberta, whose support added to the effectiveness of the study.

Finally, the writer wishes to express his sincere appreciation for the understanding support given by his wife and children throughout the duration of this study.

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CHAPTER I

THE PROBLEM

I. INTRODUCTION

The role of the junior college in Alberta is becoming very important in the development of a pattern of post-secondary educational opportunities compatible with the number of students seeking education, and with the particular kinds of education which thoses students desire. The intrinsic value of education notwithstanding, much national and international emphasis is today being placed on the benefits to be derived as a result of a well-educated citizenry, particularly in a technological society such as ours. The junior college is seen as providing a solution to some of the major problems of our universities: (a) large student populations and the consequent anonymity of students, (b) the necessity of offering courses of a highly technological or vocational nature to relatively few students, and (c) the difficulty experienced by some students in making the transition from secondary school to university.

Meeting the demand for post-secondary education in Alberta, five junior colleges are presently in operation: Grande Prairie Junior College, Lethbridge Junior College, Medicine Hat Junior College, Mount Royal Junior College (in Calgary), and Red Deer Junior College; all but Mount Royal Junior College have been established within the last

eleven years. It has been estimated[1] that the number of students graduating from Alberta secondary schools in 1975 will be almost double that of today; this has obvious implications for both the physical and financial capacities of present junior colleges, and for the establishment of junior colleges in the future.

It is, therefore, of both academic and practical interest that some measure(s) be made of the expenditures required in support of maintenance of junior colleges. Equally important, it may be added, are measures of sources of revenue by which the expenditures may be balanced. The patterns of sources of revenue,however, are not as flexible in nature as those of expenditures, for provincial and federal grants, student fees, and the contributions of participating school boards constitute virtually all the sources of revenue for the junior college in Alberta. Expenditure patterns, on the other hand, may vary from college to college, and from year to year within the same college.

Cost Analysis

An examination of expenditure patterns is sometimes referred to as a cost analysis. Such analysis has long been prevalent in the business community, where expenditures are shifted to the object manufactured and/or for sale. It is, however, a recent technique in educational finance, with some of the first analyses of education expenditures being attempted

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[1] E. J. Hanson, Financing Education in Alberta (Edmonton: The Alberta Teachers' Association, 1966), p. 80.

during the 1920's; one reason for this apparent tardiness could well be the difficulty experienced in defining an educational 'product'[2].

An early milestone in educational cost analysis was reached in 1935, when the National Committee On Standard Reports For Institutions Of Higher Education published a series of analytical procedures to be followed by American colleges and universities[3]. Individual universities, perhaps following the lead of the above committee, did begin to examine their expenditures[4]; it does not appear, though, that the practice has become widespread in the United States, or for that matter, in Canada. A second purpose of the National Committee On Standard Reports was to induce standardization in cost analyses; again, this purpose does not appear to have been fulfilled.

Generally, the depth of analysis varies from institution to institution, the authorities responding to differing needs for cost analysis. Thus, E. Eikman outlines a gross

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[2] T. E. Glaze, Business Administration For Colleges And Universities (Baton Rouge: Louisiana State University Press, 1962), p. 128.

[3] National Committee On Standard Reports For Institutions of Higher Education, Financial Reports For Colleges and Universities (Chicago: The University of Chicago Press, 1935), pp. 177-270.

[4] An historical treatment of procedural development in several American States may be found in J. L. Miller, Jr., State Budgeting For Higher Education: The Use of Formulas and Cost Analysis (Ann Arbor: The University of Michigan, 1964), Chaps. 4, 5.

methodology[5], whereas J. Evans prescribes an extremely detailed technique[6]. Indeed, the particular technique used by a cost analyst may be a combination of several schemes, depending on the scope and nature of the expenditures being subjected to analysis[7].

The Board of Post-Secondary Education for the Province of Alberta, perhaps realizing the urgency for knowledge about junior college expenditure levels implied at the beginning of this Chapter, has initiated a series of junior college cost studies. P. J. Atherton has completed cost analyses of Grande Prairie Junior College and Mount Royal Junior College[8] for the 1967-1968 academic year.

Upon the completion of cost analyses for the remaining three junior colleges in Alberta, the pattern of collection of baseline data will have been completed for this Province. Analytical activities may then range from inter-college comparisons of costs to the compilation of a "time-series" of cost data for some or all of the colleges.

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[5] E. Eikman, "A 'Quicky' Cost Study," College and University Business, 30 (March, 1961), pp. 40-41.

[6] J. M. Evans, "Accounting's Progressive Primary Use Plan," College and University Business, 18(January, 1955), pp. 41-45.

[7] For example, see G. E. Van Dyke, "Educating Nurses In Liberal Arts Colleges And What It Costs," College and University Business, 10 (January, 1951), pp. 29-34.

[8] P. J. Atherton, Alberta Junior College Cost Studies Number I: Mount Royal Junior College (Edmonton: The Board of Post-Secondary Education, 1968).

II. THE PROBLEM

The major object of the research was to conduct a comparative analysis of the operating expenditures of three junior colleges in Alberta, the expenditures covering a period of one academic year. A more specific statement of the problem and sub-problems follows below.

The Problem and Sub-Problems

To reduce the operating expenditures of each of Lethbridge Junior College, Medicine Hat Junior College, and Red Deer Junior College, for selected programs offered during the period September 1, 1968 to August 31, 1969, to the following set of unit-costs:

(a) the cost per pupil, by course,

(b) the cost per pupil, by program,

(c) the total cost per pupil,

(d) the total cost per course,

(e) the total cost per program,

(f) the total cost per pupil, by implementary expense,

(g) the total cost per course, by implementary expense,

(h) the total cost per program, by implementary expense,

(i) the total direct expenditure per pupil,

and (j) the total indirect expenditure per pupil.

Generally, the programs included in the study were those which were offered on a daytime basis during the Fall

and Spring terms, and for which the colleges received Provincial grants.

Sub-Problem One. To determine, for each college, the subsidy effect of provincial grants and student fees. Although the primary purpose of the study was not to make an analysis of college revenue, it was the intent of this portion to determine whether any programs were being offered at a deficit. Any significant findings would have implications for the budgeting of programs, the offering of courses, the size of enrollments, student fees, and the adequacy of coverage provided by governmental grants.

Sub-Problem Two. To make a comparative analysis of the outputs generated for the three colleges, in order to identify the factors which appeared to account for peculiarities in each college's expenditure pattern.

III. DEFINITION OF TERMS

Auxiliary Data: data which pertain to the entities on whose behalf expenditures have been made. Thus, the number of enrolled pupils, the number of faculty members, and the floor areas of instructional rooms would be considered to be auxiliary data.

Base: a basis upon which implementary expenditures are allocated (or "prorated") to instructional programs. Thus, the number of pupils per program might be a basis of allocation.

Cost: refers to the total sacrifice made during a process, in monetary and/or other forms. In Accounting, 'cost' refers to all charges entered as liabilities: capital payments, operating payments, debt charges, depreciation allowances, and so on. Expenditures are subsumed by the meaning of 'costs', since expenditures are indicated by monetary payments made for approved bills for materials received by, and for services rendered to, in this case, the colleges. As used in this study, the term 'cost' is a synonym for 'expenditure', particularly in the term 'unit-cost'.

Direct Expenditure (or Expense): an expenditure directly associated with the instructional aspects of a particular course or program; instructional salaries and supplies constitute two such expenditures.

Dollar Volume of Expenditure: the volume of direct expenditures attributed to any course or program.

Implementary Department: a department which is required for the facilitation or implementation of instruction. Implementary departments usually relate to the broad spectrum of college activities rather than to specific instructional or curricular areas. A simple classification of implementary departments, then, might include administrative, library, and counselling departments.

Implementary Expenditures (or Expense): an expenditure made by an implementary department. The salaries

of administrative personnel, the costs of advertising, and the costs incurred in maintenance of buildings and grounds would thus constitute three implementary expenditures.

Indirect Expenditures: any expenditure related to the instruction of a number of similar courses, or to the instruction of a specific program. The supplies shared by a number of chemistry courses, or the cost of a department head's administrative activities, cannot be attributed to any one course; these expenditures must be distributed among the several relevant courses. Indirect expenditures are subsumed by the definition of direct expenditures.

Program: an instructional program of study consisting of a group or series of courses offered in a particular subject area (e.g.,"Secretarial"), or a group or series of courses which guide a student toward a particular academic goal (e.g.,"Pre-Dentistry") ; more specifically, the term refers to a program of study offered by a college and included in this study.

Pupil: a person enrolled or registered in a course for the entire duration of the course, regardless of that person's academic standing at the termination of the course. This definition is seen to be tenable for the purposes of this study, since expenditures at the course level were necessary whether a pupil did or did not gain credit for a course.

Standard: a particular combination of bases used in allocating the expenditures of an implementary department.

The standard of allocation of expenditures of a Dean's Office to a program might be 50 per cent by faculty members per program, and 50 per cent by numbers of pupils per program.

Operating Expenditures: total college expenditures less capital outlay. Included under this definition are administrative, maintenance, and instructional salaries, equipment and supply expenditures, physical plant expenditures, and other expenditures such as thoses for travel allowances.

Unit-cost: a quotient derived from expenditures made during the performance of a task. The dividend is composed of the expenditure data which is to be reduced to unit terms, and the divisor comprises a measure of the size of the task performed. For example, an expenditure of $200,000.00 on behalf of 400 pupils yields a unit-cost (quotient) of $500.00 per pupil.

IV. ASSUMPTIONS

1. Since it was not a purpose of the study to arrive at conclusions about the quality of either the inputs or the outputs of the educational process at the junior college level, it was assumed that differences in unit-costs reflected differences in cost rather than differences in quality.

2. In order that the unit-costs associated with any particular course be applied to several programs (through summation with the unit-costs of other courses),

it was assumed that pupils of those several programs were randomly assigned to the sections of each course for which multiple sections existed.

3. Since the input data which were collected related to actual expenditures made during but two-thirds of the period under study, it was assumed that the technique of projecting the volume of actual expenditures, to arrive at estimated expenditures, constituted a valid technique.

V. LIMITATIONS

1. This study was limited to an analysis and comparison of operation expenditures of Lethbridge Junior College, Medicine Hat Junior College, and Red Deer Junior College, for the period September 1, 1968 to August 31, 1969.

2. Any interpretation of the data is limited by the fact that the three junior colleges utilized different systems of accounting. As a consequence, it was not always possible to construct an applicable classification of expenditures, nor was it always possible to treat specific (and similar) expenditure items in precisely the same manner.

VI. DELIMITATIONS

This study was delimited to the operational expenditures of the colleges for the programs given in Appendix A. As these programs generally enabled a pupil to transfer or gain entrance to a University or Institute of Technology, "evening interest" and other "continuing

education" programs were thus excluded.

VII. SIGNIFICANCE OF THE STUDY

The major justification for this study lay in the revealing of the unit-costs of operation for the colleges under study; of specific importance was the determination of these unit-costs for all three colleges by the application of one technique, thus allowing for some degree of validity in the comparisons of unit-costs. It is to be hoped that the unit-costs generated may serve the following purposes:

(a) The provision of baseline data in the accumulation of financial statistics relevant to the operation of junior colleges in Alberta,

(b) The provision of guidelines for the administrators of the junior colleges studied in budgetary, program, and course planning,

and (c) The completion of the cost analysis pattern for all junior colleges in Alberta.

It is hoped that the methodology applied in this study will serve as a model for future studies, with the possibility of improvement, and eventual adaptation of the entire methodology to computer requirements, being recognized.

VIII. SUMMARY

The major purpose of this study was to generate several unit-costs from selected operational expenditures

for each of three junior colleges in Alberta. A second purpose was to compare the outputs from each college with those of the other two colleges, to determine the existence of any peculiarities in expenditure patterns. A third purpose was to examine the degree to which provincial grants and student fees offset operational expenditures (i.e., their subsidy effect), for each college.

CHAPTER II

THE METHODOLOGY

I. INTRODUCTION

The literature on the topic of educational cost analysis appears to be rather limited in quantity; as well, that literature which does exist usually deals with specific problems and is therefore scattered throughout many texts and periodicals. College and University Business, a periodical designed for the needs of business officials of American colleges and universities, occasionally carries articles on the topic of cost analysis. Such articles are usually oriented towards the practicing cost accountant, and have contributed to a substantial portion of the design of the study herein. One purpose of this Chapter, then, is to provide a comprehensive review of the available literature on the techniques of educational cost analysis.

A second purpose of this Chapter is to outline the particular methodology used in this study, to show how it was derived from techniques described in the literature, and to indicate those innovative aspects of the design which made the methodology applicable both to the conditions peculiar to the junior colleges studied and to the resources available to the researcher.

II. OVERVIEW OF TECHNIQUES

Superficially, the technique usually employed in unit-cost studies involves the gathering of three sets of data[1]: (a) direct expenditure data, (b) implementary expenditure data, and (c) auxiliary data. These sets of data are combined, for the purpose of computing unit-costs, by the general formula

$$\text{Unit-cost} = \frac{\text{Direct Expenditures + Implementary Expenditures}}{\text{Appropriate Unit of Auxiliary Data}}$$

It may be seen, then, that the adequacy of any cost analysis technique is generally dependent upon the total volume of data to be handled, and specifically dependent upon the physical and financial size of the institution involved, the time and resources available to the analyst, and the use which will be made of the outputs[2]; variations in these factors contribute to the idiosyncratic nature of each unit-cost study.

General Design

At the outset of planning a cost analysis, two decisions must be made: (1) it must be determined whether actual or budgeted expenditures are to be used as input data[3], and

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[1] J. D. Russell, The Finance of Higher Education (Chicago: University of Chicago Press, 1954), p. 138.

[2] J. M. Evans, "Total Cost of Educational Programs," "College and University Business, 17 (September, 1954), p. 42.

[3] J. M. Evans, "Accounting's Progressive Primary Use Plan," College and University Business, 18 (January, 1955), p. 23.

(2) the form in which outputs are to be expressed must be determined. While the first decision depends on the financial complexity of the institution and the system of accounting in use, the second decision rests largely on the format of the input data. According to J. D. Millett, ". . . cost data for analytical purposes are most meaningful when presented in terms of educational programs."[4] It is thus implied that some form of program or performance approach should be used in both the collection and treatment of data.[5]

The overall structure for the treatment of the three sets of data referred to above is typically as follows[6]: all expenditures for an institution are collected, and determined to be direct or implementary in nature; these expenditures, through direct assignment or proportionate allocation, are attributed to instructional units such as programs and courses; and unit-costs are derived at the course, program, or college level. Thus the entire pool of institutional expenditures has merely been rearranged to generate costs at specific instructional levels of the institution, and the computational portion of this process is shown in Figure 1.

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[4] J. D. Millett, Financing Higher Education In The United States (New York: Columbia University Press, 1952), p. 140.

[5] Also see P. J. Atherton, Alberta Junior College Cost Studies Number I: Mount Royal Junior College (Edmonton: The Board of Post Secondary Education, 1968), pp. 8-9.

[6] J. D. Russell, op. cit., pp. 139-146.

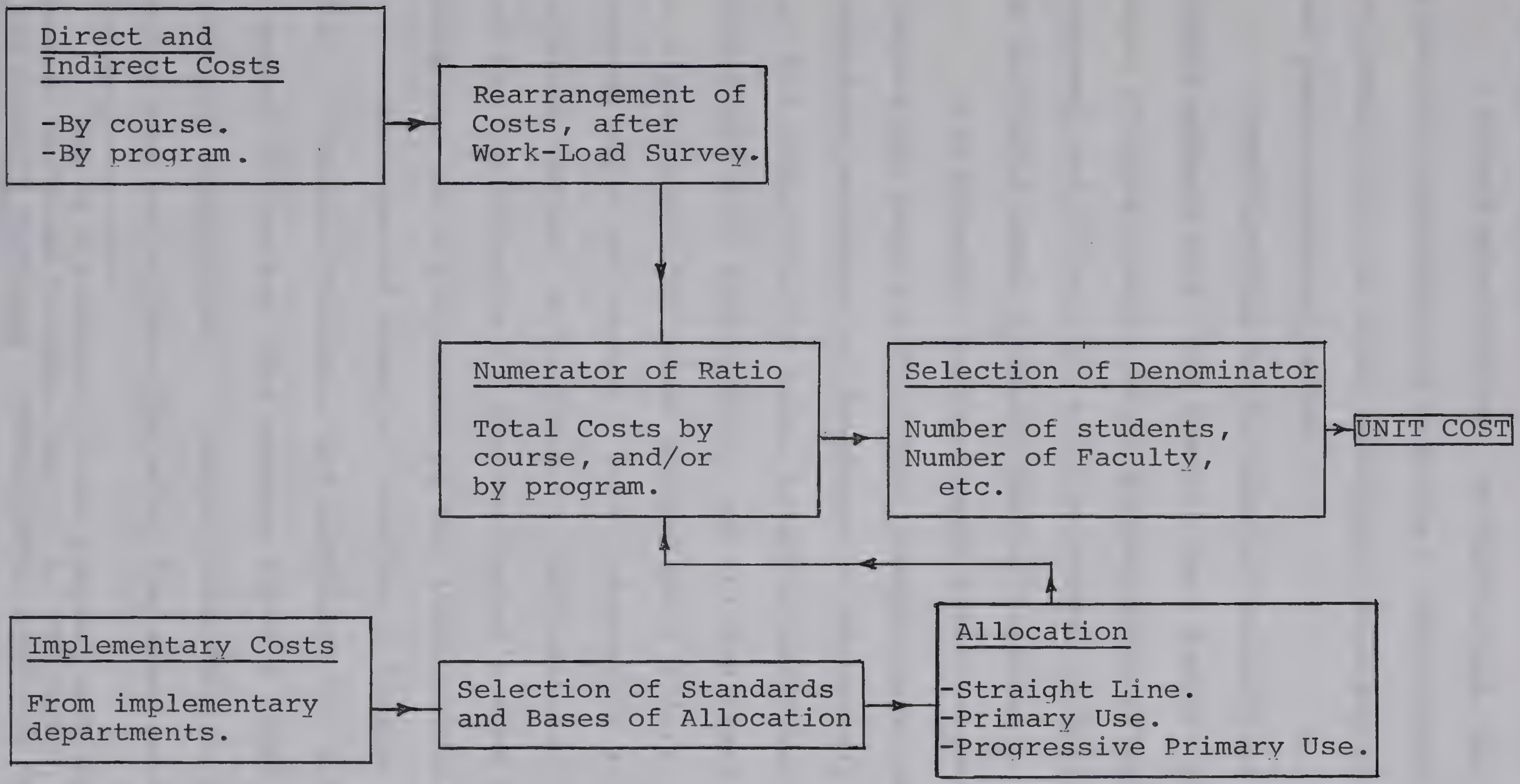
Direct and Indirect Costs
-By course.
-By program.
Rearrangement of Costs, after Work-Load Survey.
Numerator of Ratio
Total Costs by course, and/or by program.
Selection of Denominator
Number of students, Number of Faculty, etc.
UNIT COST
Implementary Costs
From implementary departments.
Selection of Standards and Bases of Allocation
Allocation
-Straight Line.
-Primary Use.
-Progressive Primary Use.

Fig. 1 A. Unit-Cost Analysis Methodology

Direct Expenditures

Direct expenditures, by definition, are usually comprised of instructional salaries, instructional supplies and equipment, and, in some instances, salaries of clerk/typists and paraprofessional aides.

Upon deciding to include an expenditure item as a direct expenditure, the analyst must decide (a) if the expense of this item is to be shared among programs and/or courses, and if so, (b) how the burden of this expense is to be allocated among programs and/or courses.

For example, instructional salaries generally constitute the majority of direct expenditures, and it is therefore necessary to determine as accurately as possible (a) the proportion of these salaries which may be truly associated with instruction, and (b) the basis upon which to allocate an individual instructor's salary among the courses which he teaches. This information is usually obtained through an analysis of instructional workloads, and the distribution of the instructor's time becomes the basis for the distribution of his instructional salary.[7]

As a second example, consider a Science program for which numerous chemicals are purchased and shared among a number of courses (the expense thereby constituting an "indirect expenditure"). Rather than make an attempt to gather statistics descriptive of the exact amount of each

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[7] For a discussion of the purpose and construction of Faculty Workload Surveys, see J. E. Stecklein, How To Measure Faculty Workload (Washington: American Council on Education, 1961).

chemical used in each course involved, it is often prudent to simply allocate the entire cost of the chemicals among the relevant courses on a representative basis.

As a final example, it may occur that a piece of equipment was purchased solely for the purposes of one course; obviously this expense would not be allocated to other courses.

Thus the gathering and treatment of direct expenditure data is a fairly straightforward process, and follows a similar pattern in most cost analysis. Nonetheless, this must be done precisely and rationally, since direct expenditures often comprise the majority of an educational institution's total expenditures.

Implementary Expenditures

Since the usual goal of a cost analysis is the conversion of the sum of all institutional expenditures (capital, operational, or both) to some measure of "production cost", the expenditures associated with activities supportive to instruction must be allocated to instructional programs and/or courses.[8] A second reason for such allocation, especially in larger institutions, relates to the "purchasing" of the services of universities and colleges by external agencies; in order to determine an

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[8] J. D. Millett, op. cit., p. 175.

accurate price for, say, a research project, the university or college administrator must account for the cost of all activities necessary for the completion of that project.[9]

Basically, it is the method by which implementary expenditures are allocated which differentiates one cost analysis design from another. These differences in design result from the selection, for each analysis, of

> . . . a justifiable method of allocating the costs of general administration, student services, staff welfare and services, public service and information, general institutional expense, library expense, and physical plant expense to instructional programs without incurring burdensome analytical procedures and expense.[10]

Although there are a number of specific allocation methods in use[11], three categories suffice for a general classification scheme. These categories are constructed essentially on the basis of depth of analytical computation, this in turn reflecting differing views of the allocation process. In the discussion which follows below, it is useful to consider a number of implementary department A, B, C, . . . whose expenditures are to be allocated to instructional programs I, II, III, ...

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[9] Ibid., p. 176.

[10] J. M. Evans (1954), op. cit., p. 43.

[11] A comprehensive summary is given by G. E. Van Dyke and O. H. Levine, "Allocating Indirect Expenditures," College and University Business, 14 (May, 1953), pp. 22-25. Also see J. M. Evans (1954), op. cit., pp. 43-45.

The Straight-Line Method. The straight-line method assumes a linear relationship between (1) quantities of implementary services consumed by each program, and (2) the amount of implementary expense to be allocated to each program. This method entails the use of only one base in allocation; in other words, implementary expenditures are allocated solely on, say, a "per pupil", a "per square foot of instructional area", or "per faculty member" basis.

Operationally, if a program enrolled 17 per cent of all the pupils of an institution, and if a "per pupil" base were in effect, then that program would be allocated 17 per cent of the total volume of implementary expense of the institution. Further allocation of that program's share of implementary expense could be made at the course level, with the same base or another base in effect.

This method fits easily into the design of a cost analysis, for the use of only one base throughout an analysis (a) permits the carrying of arithmetic multipliers through the entire sequence of computations, and (b) allows the analyst to use data (such as the numbers of pupils and/or faculty members) which are obtained during the normal course of a unit-cost study. The collection of many other auxiliary data such as floor areas or numbers of clerks, which may be either meaningless or unavailable, is not necessary.[12]

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[12] J. M. Evans (1955), op. cit., p. 23.

On the other hand, the relative simplicity of this method may lead to loss of accuracy and detail. For example, if a "per pupil" base were employed in all allocation of implementary expenses, it would not be entirely appropriate to use this base in the allocation of the expenses of, say, a Purchasing Department; that Department's expenditures might relate more directly to the "dollar volume of program expenditures" than to the "number of pupils per program", and therefore the "dollar volume" base might be more justifiable than the "per pupil" base.[13] In a similar vein, large irregularities in class sizes could lead to a distorted distribution of physical plant expenses, say, if only a "per pupil" base were used.

The straight-line method was used by Atherton in his study of Mount Royal Junior College; except for the initial allocation of library, Counselling, and Health Services expenditures, all allocation was done using a "per pupil" base.[14]

The Primary Use Plan. The Primary Use Plan is an attempt to refine the straight-line method, in order to increase the aspect of equity. Essentially, this Plan has many bases in effect simultaneously (thereby constituting a "standard"), and the expenses are allocated to instructional programs according to the standard in effect for each

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[13] J. M. Evans (1954), op. cit., p. 43.

[14] P. J. Atherton, op. cit., p. 12.

implementary department.[15]

As an example, consider the office of the Registrar, and hypothesize that the expenses of this office (say, $15,000.00) are to be allocated as follows: 50 per cent by pupils per program, 30 per cent by dollar volume of expenditures per program, and 20 per cent by number of Faculty members per program. Thus, of the $15,000.00, $7,500.00 would be distributed among the programs on the basis of pupils per program, $4,500.00 on the basis of dollar volume of expenditure per program, and $3,000.00 on the basis of faculty members per program.

The advantage of this method over the straight-line method is its facility to accomodate anomalous circumstances; a program having relatively few pupils, but a relatively large clerical staff, would receive a more appropriate share of the total implementary expenditures by the use of both "number of clerical staff per program" as bases than by the use of, say, "number of pupils per program" alone.

The major technical difficulty of this method appears to arise during the creation of standards for implementary departments: how many bases ought to be utilized (this is partially a function of the availability of data, as mentioned earlier), and how is the relative weight of each

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[15] The variety of standards employed in forty dental schools is given in G. E. Van Dyke and O. H. Levine, _op. cit._, pp. 22-25.

base determined? In other words, it would appear that the determination of standards involves the complete resolution, on a time basis, of each implementary department's activities; this well could be an insurmountable difficulty.[16]

A second problem arises from an examination of any implementary department's activities, namely, that some of this activity is directed towards other implementary departments rather than to instructional programs. Thus, some Physical Plant expenditures, for example, should be allocated to implementary departments as well as to instructional programs; such allocation does not occur under the Primary Use Plan.

The Progressive Primary Use Plan.[17] The Progressive Primary Use Plan is essentially the Plan described immediately above, but contains two refinements of the Primary Use Plan: (a) implementary expenses, while being allocated to instructional programs, are also allocated to the implementary departments. This allocation is made, with a standard for each department in effect, in the first of two computational runs. (b) A roster of all implementary departments and instructional programs is constructed, with the implementary departments grouped (for convenience in computing) at the head of the roster; the only figures on the roster are the implementary expenses of each department as awarded in (a). In the second of the two computational runs, the expenses of the

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[16] J. M. Evans (1954), op. cit., p. 44.

[17] For a complete treatment of this Plan, including the various forms appropriate to its design, see J. M. Evans (1955), op. cit., p. 45.

first department listed are distributed, by the use of the standards in effect, to all the department and programs below the first department on the roster; these expenses are thus completely allocated, and the procedure is followed again successively (or "progressively") through all the implementary departments. There then remain only the instructional programs and the expenses allocated to each of them in this second run. The sum of these "second-order" expenses and the expenses ascribed to each program in the first run (including direct costs, of course) constitutes the total expense of each program.

While the Progressive Primary Use Plan is felt to be the most accurate of the three methods which have been described in this section[18], the depth of treatment afforded by its computational complexity appears to be particularly relevant to large institutions where many implementary departments are found, each responsible for a considerable volume of expenditure.

Outputs

Once the direct expenditures for courses and/or programs have been determined, and the implementary expenditures have been allocated, the computation of outputs

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[18] L. H. Brammer, "A Technique for the Study of Unit Costs of Higher Education in Colleges for Teacher Education," Dissertation Abstracts, 15 (1955), p. 363. Also see J. M. Evans (1954), op. cit., p. 45.

may begin. Again, depending upon the use to be made of the outputs, the forms in which outputs are expressed may range through sums, percentages, and unit-costs.

III. THE METHODOLOGY OF THIS STUDY

As noted previously, differences among colleges in the organization of programs and implementary departments (because of differing physical and financial settings) necessitate differences in cost analysis techniques; in other words, it is not likely that a given technique will apply equally well to two or more institutions. However, because the similarities among the three colleges included in this study were greater than the differences, and because one person was conducting the study, it was possible to formulate and apply one general methodology.

Before describing in detail the operations involved in the transformation of data and subsequent computations, it may be useful to outline the overall methodology, thus gaining some perspective. Six distinct stages may be identified, and these are discussed below; the stages were essentially identical for each college.

Stage 1. Direct expenditure (instructional salaries, supplies, equipment, and department head release time) were determined, and allocated or appropriated to relevant courses. This yielded the total expenditure for each course, and unit-costs at the course level (e.g., the "cost per pupil of English 210") were generated.

Stage 2. Direct expenditures for programs were determined by summing the appropriate direct costs of courses required for each program; a "direct cost per pupil" was then generated for each program.

Stage 3. Implementary expenditures (for the entire college) were allocated to programs, on a "per pupil" basis.

Stage 4. The total (direct plus implementary) cost of each program was computed, and a "total cost per pupil" was generated for each program.

Stage 5. Program expenditures were compared with the revenues from fees and grants.

Stage 6. Overall unit-costs were generated from the overall expenditure data.

It is to be noted, then, that the aggregation of expenditures proceeded from the course level to the college level. A more thorough examination of the techniques employed is now warranted.

Collection of Data

At the February, 1969 meeting of the Advisory Council of the Board of Post-Secondary Education, the writer reviewed the design of the study with administrators of the colleges involved. At that time it was decided that the Bursars of the participating colleges would collect all necessary expenditure data; the writer took the responsibility for submitting the appropriate forms to the Bursars, and for collecting workload data.

Collection of expenditure and auxiliary data. In order to increase the efficiency of collection of expenditure and auxiliary data (and the handling thereof), three forms and an instruction sheet were prepared, and submitted by mail to the Bursars (see Appendix B). Several follow-up telephone calls were made to each Bursar, to determine and correct any errors in procedure.

A breakdown of pupil population, by program, was obtained from each Bursar, along with data pertaining to grants and pupil fees.

Faculty workload survey. A Faculty Workload Survey (see Appendix C) was constructed specifically for this study, the format and items being derived from the literature.[19] The Survey Forms were forwarded to the Principals of the participating colleges for distribution to Faculty members; during this distribution, code numbers could be substituted for Faculty members' names.

It was the intent of this Survey to gather data about the distribution of instructors' time among courses, programs, and implementary departments; this data then provided a basis for the allocation of Faculty members' salaries. While some of the data requested by the Survey (e.g.,"Courses Taught") were obtained from the Bursars on Form #1 (Appendix B), it was necessary that instructors employ such data in their analysis of their time utilization. Although the only information ultimately taken from the Survey was that

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[19] For example, J. E. Stecklein, *op. cit*.

indicated in Column(8) (i.e.,"Percentage of Your TOTAL Time"), the other columns were necessary to achieve accuracy in each Faculty Member's completion of the Survey form. The validity of the workload data was ascertained by comparison with the workload indicated (for each instructor) in the college Calendars, and with that outlined on Form #1.

Treatment of the Data

Two worksheets (see Appendix D) and three computer (APL) functions (see Appendix E) were constucted for the transformation of input data and the performance of the necessary computations. The complete computer "program" reflected the design of the study, with the aggregation of expenditures and computation proceeding from the course level to the program level, and to the college level.

Direct and Indirect Expenditures. Direct and indirect expenditure data from forms #1 and #2 (see Appendix B), and time breakdown data from Column (8) of the Faculty Workload Survey were placed on Worksheet #1 (see Appendix D), there being one such Worksheet for each course included in the study. Any allocations of indirect expenditures among similar courses (e.g.,one lab assistant shared by three physics courses), and any attributions of indirect expenditures to specific courses were made at this point.

Five inputs, corresponding to (1) the identities of instructors, (2) the respective annual salaries of instructors, (3) the percentage of their total time devoted to each

particular course, (4) any other direct expenditures allocated to each course, and (5) the number of pupils enrolled in each course were thus given to the computer, under the "COURSE" function.

Form #2 yielded indirect expenditures by program; these expenditures were allocated to the courses of relevant programs on a "per pupil" basis, according to the formula

$$\text{Allocated Expenditures} = \frac{\text{No. Pupils (Course)}}{\text{No. Pupils (Program)}} \times \text{Total Program Expenditures}$$

Implementary expenditures. The allocation of implementary expenditures followed the "straight-line" method, with a "per pupil" base in effect throughout. The following reasons are given in justification of the use of this method: (1) there was no evidence to show that gross irregularities existed among pupil-instructor ratios for programs, and a measure of pupil enrolment therefore reflected a measure of use of supportive departments; (2) the implementary departments of the participating colleges were few in number, their activities virtually focussed on the task of instruction; any required compensation for inter-departmental allocation (as in the Progressive Primary Use Plan) would thus be minimal; and (3) since the outputs for the colleges were to be compared, a common basis of allocation was desirable; because the setting of each college differed from that of the other two colleges, the only common base feasible was a "per pupil" base.

Since actual expenditure data were collected (on Form

#3, Appendix B) only for the period September 1, 1968 to April 30, 1969, it was necessary to obtain some measure of implementary expenditure for the remainder of the period under study. Therefore, implementary salaries, interest payments, and other constant expenditures were projected from May 1, 1969 to August 31, 1969, by increasing the actual expenditures 1.5 times. The sum of all implementary expenditures thus obtained for each college was allocated to the programs of each college on a "per pupil" basis.

Preparation of program input data. A list of courses required for the completion of programs was compiled from each college's Calendar on Worksheet #2 (see Appendix D), there being one such worksheet for each program included in the study. Other data required for the "PROGRAM" computer function (such as program fees, number of pupils, and provincial grants received) were also placed on this worksheet.

Outputs

At the course level, the computer function generated the total direct cost of each course, and the direct cost per pupil of that course; the latter output was the quotient of the total direct cost of the couse and the number of pupils enrolled in that course.

At the program level, the outputs generated are given below, each followed by the formula used in its derivation:

$$\text{Total Direct per Program} = (\text{Total Direct per Pupil}) \times (\text{Number of Pupils on Program}) \quad (4)$$

$$\text{Total Program Cost} = (\text{Total Direct per Program}) + (\text{Allocated Implementary Expenditures}) \quad (5)$$

$$\text{Total Program Cost per Pupil} = \frac{\text{Total Program Cost}}{\text{Number of Pupils on Program}} \quad (6)$$

Many of the programs included in this study permitted a choice to be made among a number of optional courses; this meant that specific unit-costs could not be generated at the program level, since the "per pupil costs" of the optional courses were not uniform. In order to overcome this difficulty, the "per pupil costs" of the required (constant) courses were combined with those of the "most costly" and "least costly" optional courses; this yielded maximum and minimum program unit-costs. Since the actual distribution of each program's pupil population among courses was not known, however, these maximum and minimum unit-costs were simulated; the magnitudes of the actual unit-costs depended entirely upon the particular combination of courses which each pupil selected.

At the college level, the outputs from the preceeding levels were aggregated and a final set of outputs generated for each college:

$$\text{Total Cost per Pupil} = \frac{\text{Total College Expenditure}}{\text{Total No. of Pupils}}, \quad (7)$$

$$\text{Total Cost per Course} = \frac{\text{Total College Expenditure}}{\text{Total No. of Courses}}, \quad (8)$$

$$\text{Total Cost per Program} = \frac{\text{Total College Expenditure}}{\text{Total No. of Programs}}, \quad (9)$$

$$\text{Total Cost per Pupil (Implementary)} = \frac{\text{Total College Imp. Expenditure}}{\text{Total No. of Pupils}}, \tag{10}$$

$$\text{Total Cost per Course (Implementary)} = \frac{\text{Total College Imp. Expenditure}}{\text{Total No. of Courses}}, \tag{11}$$

$$\text{Total Cost per Program (Implementary)} = \frac{\text{Total College Imp. Expenditure}}{\text{Total No. of Programs}}. \tag{12}$$

Subsidy effect. Data relating to the subsidy effect of grants and pupil fees were summed by program (in the PROGRAM function), and compared on an arithmetic basis with the computed Total Program Cost per Pupil, for each program.

IV. SUMMARY

This Chapter has (a) provided an overview of the techniques of education cost analysis, and (b) presented the methodology employed in this study. While some detail was entertained in the discussion of the particular methodology employed herein, the important aspects of the design of this study were as follows: (a) the computation of unit-costs rested on an aggregation of expenditures from the course level, to the program level, to the college level; (b) all allocation of indirect and implementary expenditures followed a per-pupil basis; and (c) the series of outputs generated were not only descriptive of the expenditures of the colleges involved, but allowed for inter-college comparisons at many levels.

CHAPTER III

MEDICINE HAT JUNIOR COLLEGE

During the period under study, Medicine Hat Junior College had a pupil population of 309, and a faculty composed of four administrators and twenty-two full-time and sessional instructors. Fourteen of its seventeen offered programs were of a university-transfer nature; the remaining three programs included Secretarial Science, Academic Upgrading, and University Preparation (Matriculation). Since its inception in 1965, the College has occupied one wing of Medicine Hat High School; this has precluded the necessity of a "physical plant" department, since these premises have been rented, and contributed to a minimization of implementary expenditures.

This Chapter is devoted to an analysis of the expenditures of Medicine Hat Junior College, under the terms of the Problem and Sub-Problem One.

I. INPUT DATA

A gross breakdown of the input data (from Appendix F) is shown in Table I. It is noted that, of the total volume of expenditures of $304,437.84, instructional salaries comprised 55.2 per cent, implementary expenditures comprised 36.4 per cent, and indirect expenditures comprised the remaining 8.4 per cent.

Table II contains a summary of implementary expenditure

TABLE I

GROSS BREAKDOWN OF INPUTS

MEDICINE HAT JUNIOR COLLEGE

Input	Amount	Percentage of Total
Implementary Expenditures	$110,911.04	36.4
Indirect Expenditures	25,597.28	8.4
Instructional Salaries	167,929.52	55.2
Total	$304,437.84	100.0

Source: Tables XXIII to XXVI (Appendix F).

TABLE II

SUMMARY OF ACTUAL AND ESTIMATED IMPLEMENTARY EXPENDITURES

MEDICINE HAT JUNIOR COLLEGE

Department	Salaries	Other	Total
Administration	$66,686.89	$17,004.74	$83,691.63
Counselling	5,641.71	--	5,641.71
Library	9,575.16	3,817.78	13,392.94
Physical Plant	--	8,814.76	8,184.76
Total	$81,903.76	$29,007.28	$110,911.04

Source: Tables XXIII to XXVI (Appendix F).

data. It may be noted that the structure of implementary departments was very straightforward, primarily because of the relatively small number of personnel associated with these departments. It may be seen that the salaries of these personnel comprised some 73.8 per cent, and physical plant expenditures some 7.4 per cent of the total volume of $110,911.04; the remaining 18.8 per cent was attributed to insurance, clerical supplies, and other overheads.

II. COURSE EXPENDITURES

In accordance with the method outlined in Chapter II, the salaries of all instructors were distributed to courses on the basis of the Faculty Workload Survey data (see Table XXVI, Appendix F). Indirect expenditures were allocated on a "per pupil" basis to relevant courses, and, when added to the allocated instructional salaries, yielded the total direct costs of courses. Finally, the quotient of this latter sum and the number of pupils in each course represented the "direct cost per pupil" of each course. This process is summarized in Table III, for the courses offered by the College.

An examination of Columns (2) and (6) of Table III brings forth the general (inverse) dependency of per pupil costs on pupil enrolment, with the direct costs per pupil for full-year courses ranging from $36.60 (History 205, 66 pupils) to $937.04 (Shorthand 211/212, 2 pupils). However,

TABLE III

DIRECT COSTS AT THE COURSE LEVEL

MEDICINE HAT JUNIOR COLLEGE

Course (1)	No. of Pupils (2)	Allocated Salary (3)	Indirect Expenditures (4)	Total Direct Expenditures (5)	Direct Cost per Pupil (6)
Acct. 101	32	$3,471.81	$ -	$3,471.81	$108.49
Acct. 201	12	2,284.87	-	2,284.87	190.40
Biology 100	18	3,551.84	593.64	4,145.48	230.31
Biology 200	63	7,114.36	2,077.76	9,192.12	145.91
Bus. Admin. 101/102	24	2,097.78	11.54	2,109.32	87.89
Bus. Admin. 103	3	2,097.78	1.44	2,099.22	699.74
Bus. Admin. 111/112	13	2,097.78	6.25	2,104.03	161.85
Bus. Admin. 121/122	22	1,543.03	10.57	1,553.60	70.61
Bus. Admin. 131/132	5	2,097.78	2.40	2,100.18	420.04
Bus. Admin. 141[a]	20	677.55	4.81	682.36	34.12
Bus. Admin. 142[a]	20	949.55	4.81	954.36	47.71
Chemistry 130	27	2,428.05	609.27	3,037.32	112.49
Chemistry 230	36	7,271.17	811.46	8,082.63	224.52
Chemistry 250	15	3,285.01	338.19	3,623.20	241.55
Comm. & Change[a]	20	969.34	-	969.34	48.47
Data Proc. 101/102	14	2,722.00	193.62	2,965.62	211.83
Drama 220	9	3,984.18	501.68	4,485.86	498.43
Economics 100	16	2,666.59	36.62	2,703.21	168.95
Economics 200	56	5,333.18	128.36	5,461.54	97.53
Ed. Admin. 261[a]	83	1,421.62	-	1,421.62	17.23

TABLE III (continued)

Course	No. of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
Ed. Fdn. 201[a]	82	$1,000.00	$ -	$1,000.00	$12.12
Ed. Psych. 212	71	4,027.36	885.87	4,913.23	69.20
Eng. Mech. 202	7	1,924.98	-	1,924.98	275.00
English 111	41	3,814.34	13.63	3,827.97	93.37
English 140	33	3,984.18	9.88	3,994.06	121.03
English 240	181	12,263.50	60.31	12,323.81	68.08
English 288	20	2,602.94	6.68	2,609.62	130.48
French 100	15	2,298.22	64.76	2,362.98	156.94
French 200	15	2,003.14	64.76	2,067.90	137.86
French 201	10	2,003.14	43.17	2,046.31	204.63
German 200	7	1,000.00	75.05	1,075.05	153.58
Geography 201	12	1,000.00	-	1,000.00	83.33
History 105	25	1,393.68	-	1,393.68	55.74
History 205	66	2,415.71	-	2,415.71	36.60
Math 100	31	1,933.53	70.21	2,003.74	69.64
Math 111	36	1,933.53	81.72	2,015.25	55.98
Math 211	60	3,867.06	135.82	4,002.88	66.72
P.E. 203[a]	16	653.47	144.95	798.42	49.90
P.E. 204	14	1,633.68	126.92	1,760.60	125.76
P.E. 205[a]	16	653.47	144.95	798.42	49.90

TABLE III (continued).

Course	No. of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
P.E. 218	87	$3,623.57	$788.85	$4,412.42	$50.71
P.E. 228	55	2,940.62	498.59	3,439.21	62.53
P.E. 311[a]	17	653.47	154.05	807.52	47.50
Physics 100	12	1,924.98	445.24	2,370.22	197.52
Physics 200	15	1,924.98	556.35	2,481.33	165.42
Physics 240	15	1,924.98	556.35	2,431.33	165.42
Pol. Sc. 200	30	2,666.59	-	2,666.59	88.88
Psych.202	43	2,013.68	536.08	2,549.76	59.29
Sec. Proc. 221/222	15	1,574.89	207.45	1,782.34	118.23
Sec. Sc. 101/102	10	1,801.80	517.50	2,319.30	231.93
Sec. Sc. 111/112	11	3,349.50	569.25	3,918.75	356.25
Sec. Sc. 230/231	16	2,425.50	829.40	3,254.90	203.43
Shorthand 211/212	2	1,846.42	27.66	1,874.08	937.04
Typing 10/20/30	9	976.62	82.98	1,059.60	937.04
Typing 201/202	6	1,030.88	124.46	1,155.34	192.55
Total		$141,229.68	$13,155.31	$154,384.99	

Source: Tables XXXIV and XXXV (Appendix F), and Bursar, Medicine Hat Junior College.

selected examples (e.g.,Chemistry 230 and English 140) show that this relationship involved other independent variables such as the proportion of each instructor's workload consumed by a course, and the volume of indirect expenditures allocated to a course.

It may further be noted that direct costs per pupil for four-month courses were (as should be expected) approximately one-half the corresponding costs for full-year courses.

Of all the courses included in Table III, the Business Administration-Secretarial Science courses generally had the highest direct costs per pupil. This resulted primarily from the relatively low enrolments in these courses. The university-oriented courses, containing the bulk of the total College enrolment, had correspondingly lower direct costs per pupil. However, of these latter courses, the specialized 200-level science courses were the most costly due to low enrolments and relatively high indirect expenditures.

III. PROGRAM EXPENDITURES

From the data in Column (6) of Table III, direct expenditures were determined by summing the direct cost per pupil for the courses specified (in the College Calendar) as being included on the program under consideration; the "direct per pupil program costs" so generated may be found in Appendix I. The product of this latter unit-cost and the

number of pupils enrolled on each program yielded the "total direct costs" for each program.

Implementary expenditures were distributed among the programs at this point, and the summation of the total direct costs and the allocated implementary expenditures yielded the "total costs" for each program. Finally, the quotient of the total costs and the number of pupils on each program represented the "total cost per pupil" for each program. The results of this entire process, for offered programs, are shown in Table IV.

It may be noted in Columns (4) to (9) of Table IV that maximum and minimum costs are indicated for all but two of the seventeen programs included in that Table; as indicated in Chapter II, this is a result of the offering of optional courses for program requirements. These maximum and minimum costs, therefore were the limits of the *possible* costs rather than necessary end points of the *actual* cost continuum.

It may be seen in Table IV that total costs per pupil for programs could have ranged from $656.32 (Education) to $2,593.28 (Secretarial Science). Although it is difficult to be certain (because of the simulated figures), the inverse relationship between per pupil costs and pupil enrolment appears to be clearer at this level of aggregation than at the course level. It may also be noted that eight programs each enrolled eight or fewer pupils, yet the per

TABLE IV

ACTUAL AND ESTIMATED PROGRAM EXPENDITURES MEDICINE HAT JUNIOR COLLEGE

Program (1)	Number of Pupils[a] (2)	Imp. Exp. Allocated (3)	Total Direct Costs Minimum (4)	Total Direct Costs Maximum (5)	Total Costs Minimum (6)	Total Costs Maximum (7)	Total Cost per Pupil Minimum (8)	Total Cost per Pupil Maximum (9)
Acad. Upgrading	36.5	$12,084.34	$31,754.85		$27,293.43		$747.77	
Arts	42.5	14,070.80	$16,299.63	55,410.55	$30,370.43	$69,481.25	$714.60	$1,634.85
Agriculture	1.0	331.08	467.12	847.58	798.20	1,178.66	798.20	1,178.66
Commerce	38.5	12,746.49	14,765.55	32,545.89	27,512.04	45,292.38	714.60	1,176.43
Dentistry	1.0	331.08	619.81	1,149.60	950.89	1,480.68	950.89	1,480.68
Education	82.5	27,313.91	26,832.30	76,506.37	54,146.21	103,820.28	656.32	1,258.43
Engineering	8.0	2,648.62	4,978.15	6,397.91	7,626.77	9,046.53	953.35	1,130.82
Household Science	2.0	662.16	1,131.54	2,197.49	1,793.70	2,859.65	896.9[illegible]	1,429.82
Law	2.0	662.16	924.17	1,386.12	1,586.33	2,048.28	793.16	1,024.14
Medicine	4.0	1,324.32	2,479.24	44,598.40	3,803.55	5,922.72	950.89	1,480.68
Music	28.0[b]	9,270.18	3,915.04		13,185.22		470.90	
Nursing	4.0	1,324.32	2,059.35	2,602.51	3,383.67	3,926.83	845.92	981.71
Pharmacy	2.0	662.16	1,391.66	1,801.55	2,053.82	2,463.71	1,026.91	1,231.85
Phys. Education	15.0	4,966.13	88,570.70	17,607.90	13,536.87	22,574.03	902.46	1,504.94
Science	35.0	11,587.72	13,423.28	45,632.14	25,011.00	57,219.86	714.60	1,634.85
Sec. Science	19.0	6,290.48	17,369.99	42,981.80	23,660.47	49,272.28	1,245.29	2,593.28
Univ. Preparation	14.0	4,635.09	5,738.32	12,226.85	10,373.41	16,861.94	740.96	1,204.42
	335.0[b]	$110,911.04	$152,720.70	$339,562.45	$263,631.74	$450.473.49		

[a] Includes part-time pupils.

[b] Includes 26 Conservatory of Music pupils.

Source: Tables I and III; Bursar, Medicine Hat Junior College.

pupil program costs of those programs fell considerably within the overall program cost range cited above. This situation is explained by the observation (in Appendix I) that these eight programs included courses which were common to a number of programs; as a consequence, the per pupil costs for the programs in question did not differ significantly from those of other programs.

Data for the Academic Upgrading and University Preparation programs were submitted to the writer in a gross form; as a consequence, the related figures appearing in Table IV were not derived through the summation of course costs.

The Music program was completing its first year of existence, and the expenditures attributed to that program were primarily due to the purchasing of initial supplies and equipment. The program was offered to pupils who wished to acquire external music qualifications as well as to pupils seeking entrance to a university music program; some twenty-six pupils of the former type (who were enrolled on other programs) availed themselves of this opportunity.

IV. SUBSIDY EFFECT

In order to determine the subsidy effect of fees and grants, the maximum and minimum "total cost per pupil" for each program (Columns (8) and (9), Table IV) were compared

arithmetically with the revenue, from fees and grants, which pertained to each program. The data relevant to the programs included in this study are shown in Table V.

The fees for all program were $150.00 per full-time pupil. Under the existing structure, grants amounted to $1,050.00 per full-time pupil for all programs save Academic Upgrading; the costs associated with that program were assumed by Canada Manpower.

Excluding Academic Upgrading (because of the Canada Manpower support) and Music (because of its unusual nature, noted above), the data in Table V indicate the subsidy effect could have ranged from a subsidy of $543.68 (Education) to a deficit of $1,393.28 (Secretarial Science). The data further indicate that if near-minimum program costs were to have obtained, all programs except Secretarial Science would have been completely subsidized by fees and grants. It is also indicated, however, that the minimum deficit of $45.29 (per pupil) for the anomalous program would have been more than offset by the subsidies which obtained for the other programs.

V. OVERALL UNIT-COSTS

Unit-costs derived from the overall College input data are shown in Table VI. The design of the study is partially reflected by three of these unit-costs, with the sum of the "total direct expenditure per pupil" ($626.30)

COST-REVENUE ANALYSIS

MEDICINE HAT JUNIOR COLLEGE

Program	Total Cost per Pupil Min.	Total Cost per Pupil Max.	Fees	Grants	Subsidy Effect Max.	Subsidy Effect Min.
Acad. Upgrading	$747.77		$150.00	-[a]	$597.77	
Arts	$714.60	$1,634.85	150.00	$1,050.00	$485.40	-434.85
Agriculture	798.20	1,178.66	150.00	1,050.00	401.80	21.34
Commerce	714.60	1,176.43	150.00	1,050.00	485.40	23.57
Dentistry	958.89	1,480.68	150.00	1,050.00	249.11	-280.68
Education	656.32	1,258.43	150.00	1,050.00	543.68	-58.43
Engineering	953.35	1,130.82	150.00	1,050.00	246.65	69.18
Household Sc.	896.95	1,429.82	150.00	1,050.00	303.05	-229.82
Law	793.16	1,024.14	150.00	1,050.00	406.84	175.86
Medicine	950.89	1,480.68	150.00	1,050.00	249.11	-280.68
Music	470.90		150.00	1,050.00	729.10	
Nursing	845.92	981.71	150.00	1,050.00	354.08	218.29
Pharmacy	1,026.91	1,231.85	150.00	1,050.00	173.09	-31.85
Phys. Education	902.46	1,504.94	150.00	1,050.00	297.54	-304.94
Science	714.60	1,634.85	150.00	1,050.00	413.75	-434.85
Sec. Science	1,245.29	2,593.28	150.00	1,050.00	-45.29	-1,393.28
Univ. Prep.	740.96	1,204.42	150.00	1,050.00	459.04	-4.42

[a] Full expenses reimbursed by Canada Manpower.

Sources: Table IV and Bursar, Medicine Hat Junior College.

and the "total implementary expenditure per pupil" ($358.94) being equal to the "total cost per pupil" ($985.24). The fourth unit-cost at the pupil level, the "total indirect expenditure per pupil", was found to have a value of $82.84.

At the course level, the "total cost per course" was $5,969.94, and the "total implementary expenditure per course" was $2,174.72. With reference to programs, the "total cost per program" was $17,908.10, and the "total implementary expenditure per program" was $6,524.17.

While the relative magnitudes of the unit-costs in Table VI are discussed in Chapter VI, the absolute magnitudes cited above represent average expenditures of the College for the period under study; they are therefore of use in the forecasting of expenditures during ensuing periods of time.

VI. SUMMARY

This Chapter has outlined the technique used in analyzing operational expenditures of Medicine Hat Junior College, under the terms of the Problem and Sub-Problem One. Several unit-costs were generated, and the natures of these unit-costs were discussed. Further discussion relevant to the expenditures of this College is found in Chapter VI.

TABLE VI

OVERALL UNIT-COSTS

MEDICINE HAT JUNIOR COLLEGE

Unit Cost	Expenditures	Divisor	Amount
Total Cost per Pupil	$304,437.84	309 pupils	$985.24
Total Imp. Exp. per Pupil	110,911.04	309 pupils	358.94
Total Direct Exp. per Pupil	193,526.80	309 pupils	626.30
Total Indirect Exp. per Pupil	25,597.28	309 pupils	82.84
Total Cost per Course	304,437.84	51 courses[a]	5,969.94
Total Imp. Exp. per Course	110,911.04	51 courses[a]	2,174.72
Total Cost per Program	304,437.84	17 programs	17,908.10
Total Imp. Exp. per Program	110,911.04	17 programs	6,524.17

[a] Full-year equivalent courses.

Sources: Tables I, III, and IV.

CHAPTER IV

LETHBRIDGE JUNIOR COLLEGE

During the period under study, Lethbridge Junior College had a pupil population of 580, and a faculty composed of forty-one sessional and full-time instructors. Structurally, the College was composed of the Schools of Business Education, Liberal Education, and Technology, and the Division of Continuing Education (the expenditures of this Division, however, were not included in the study). Courses and student programs generally fell under one School, although some courses were open to pupils from all three Schools. During the period under study, the College was completing its twelfth year of operation, having occupied its own campus during the most recent seven years.

This Chapter is devoted to an analysis of the expenditures of Lethbridge Junior College, under the terms of the Problem and Sub-Problem One.

I. INPUT DATA

A gross breakdown of the input data (from Appendix G) is shown in Table VII. It may be seen that, of the total volume of expenditures of $757,297.65, instructional salaries comprised 43.2 per cent, implementary expenditures comprised 49.0 per cent, and indirect expenditures comprised the remaining 7.8 per cent.

Table VIII summarizes implementary expenditure data, and

TABLE VII

GROSS BREAKDOWN OF INPUTS
LETHBRIDGE JUNIOR COLLEGE

Input	Amount	Percentage of Total
Implementary Expenditures	$371,010.50	49.0
Indirect Expenditures	59,065.61	7.8
Instructional Salaries	327,221.54	43.2
Total	$757,297.65	100.0

Sources: Tables XXVII to XXXV (Appendix G).

an examination of Table VIII reveals a rather complex structure of implementary departments. While salaries for implementary personnel comprised some 47.0 per cent of the total volume of implementary expenditures of $371,010.50, it may also be noted that the individual implementary department having the greatest volume of expenditures was the Maintenance Department: its expenditures comprised some 37.1 per cent of the total volume of implementary expenditures.

II. COURSE EXPENDITURES

As outlined in Chapter II, the salaries of all instructors were distributed to courses on the basis of the Faculty Workload Survey data (Table XXXV, Appendix G). Indirect expenditures were allocated on a "per pupil" basis to relevant courses, and, when added to the allocated instructional salaries, yielded the "total direct costs" of courses. The quotient of this latter sum and the number of pupils in each course represented the "direct cost per pupil" of each course. This process is summarized in Table IX, for the courses offered by the College.

An examination of Columns (2) and (6) of Table IX brings forth the general (inverse) relationship between per pupil costs and pupil enrolment, with the direct costs per pupil for full-year courses ranging from $43.98 (English 110, 70 pupils) to $789.93 (Auto. 102, 20 pupils). However, selected examples (e.g., History 200 and Journalism

TABLE VIII

SUMMARY OF ACTUAL AND ESTIMATED IMPLEMENTARY EXPENDITURES

LETHBRIDGE JUNIOR COLLEGE

Implementary Department	Salaries	Supplies	Repairs or Maintenance	Overhead	Other	Total
Counselling	$17,989.50	$1,133.00	-	$48.00	$968.00	$20,138.50
Faculty Personnel	29,143.50	8,283.00	-	-	3,047.00	40,473.50
President's Office	31,495.50	2,599.00	-	199.00	10,715.00	45,008.50
Registrar's Office	14,596.50	147.00	-	39.00	204.00	14,986.50
Bursar's Office	47,832.00	1,804.00	$364.00	365.00	2,050.00	52,415.00
Maintenance	33,424.50	72.00	12,558.00	-	91,469.00[a]	137,523.50
Library	-	-	-	-	379.00	379.00
Other Admin. Exp.	-	6,406.00	-	1,480.00	52,200.00[b]	60,086.00
Total:	$174,481.50	$20,444.00	$12,922.00	$2,131.00	$161,032.00	$371,010.50

[a] Includes custodial staff and security.

[b] Includes debt charges and insurance.

Sources: Tables XXVII to XXXIII (Appendix G).

TABLE IX

DIRECT COSTS AT THE COURSE LEVEL

LETHBRIDGE JUNIOR COLLEGE

Course (1)	Number of Pupils (2)	Allocated Salary (3)	Indirect Expenditures (4)	Total Direct Expenditures (5)	Direct Cost per Pupil (6)
School of Business Education[1]					
Acct. 120	17	$1,237.50	$107.75	$1,345.25	$79.13
Acct. 121	34	1,534.50	215.49	1,749.99	51.47
Acct. 131	73	4,750.44	462.67	5,213.11	71.41
Acct. 132	66	4,794.20	418.31	4,794.20	72.64
Acct. 236	26	3,651.98	164.79	3,816.77	146.80
Acct. 237	24	3,881.88	152.11	4,033.99	168.08
Advert. 283	21	1,053.00	133.10	1,186.10	56.48
Advert. 284	21	1,053.00	133.10	1,186.10	56.48
Bus. Law 162	79	1,243.54	500.72	1,744.24	22.08
Bus. Law 166	66	2,435.94	418.31	2,854.25	43.25
Bus. Math 150	78	3,375.00	494.36	3,869.36	49.61
Bus. Math 155	63	1,328.40	399.29	1,727.69	27.42
Bkkng. 122[a]	29	3,348.00	248.68	3,596.68	124.02
Bkkng. 123	64	1,636.24	548.81	2,185.05	31.14
Cost Acct. 238	16	1,485.00	101.41	1,586.41	99.15
Data Proc. 140	14	3,592.50	120.05	3,712.55	265.18
Data Proc. 141	32	2,812.50	274.40	3,086.90	96.47
Data Proc. 149	69	2,242.50	591.68	2,834.18	41.07
Data Proc. 240	2	2,250.00	17.15	2,267.15	1,133.57
Data Proc. 245	32	1,989.00	274.40	2,236.40	70.73

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[1] All courses in this School, except those indicated by superscript "a", are of four months' duration.

TABLE IX (continued)

Course	Number of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
Des. Lab. 285	19	$1,872.00	$120.42	$1,992.42	$104.86
Economics 151	70	1,728.00	443.66	2,171.66	31.02
Economics 152	67	1,350.00	424.65	1,774.65	26.49
English 103	72	2,457.00	617.41	3,074.41	42.70
English 110[a]	70	2,635.15	443.66	3,078.81	43.98
English 141	67	2,106.00	574.53	2,680.53	40.01
Hum. Rel. 168[a]	75	3,402.48	475.35	3,877.83	51.70
Hum. Rel. 268	57	3,315.00	488.78	3,803.78	66.74
Intro. Bus. 165	68	1,386.00	430.98	1,816.98	26.72
Market 189	64	3,473.25	405.63	3,878.88	60.61
Market 289	21	1,170.00	133.10	1,303.10	62.05
Merch. Admin. 281	21	1,287.00	133.10	1,420.10	67.62
Merch. Admin. 282	19	994.50	120.42	1,114.92	58.68
Note Taking 116	56	1,449.33	480.21	1,929.54	34.46
Office Man. 299	18	1,534.50	114.08	1,648.58	91.59
Prin. of Fin. 271	8	1,728.00	50.70	1,778.70	222.34
Prin. of Fin. 272	9	1,317.60	57.04	1,374.64	152.74
Real Estate 274	8	1,089.00	50.70	1,139.70	142.46
Retail Acct. 239	20	1,218.75	126.76	1,345.51	67.28
Risk & Ins. 273	8	1,138.50	50.70	1,189.20	148.65
Sales Admin. 288	18	877.50	114.08	991.58	55.09
Shorthand 110	20	1,869.98	171.50	2,041.48	102.07
Shorthand 111	39	2,010.23	334.43	2,344.66	60.12
Shorthand 210	8	1,059.49	68.60	1,128.09	141.01
Shorthand 211	11	1,059.49	94.33	1,153.82	104.89

TABLE IX (continued)

Course	Number of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
Stats. 250	52	$2,047.50	$329.58	$2,377.08	$45.71
Systems 246	9	809.25	57.04	866.29	96.25
Typing 106	70	499.00	600.26	1,095.26	15.65
Typ. & O.P. 100	34	2,216.23	291.55	2,507.78	73.76
Typ. & O.P. 101	35	2,262.98	300.13	2,653.11	73.23
Typ. & O.P. 200	39	1,650.48	334.43	1,984.91	50.89
Typ. & O.P. 201	45	1,697.23	385.88	2,083.11	46.29
Sub-Total:		$104,406.54	$14,600.27	$119,006.81	
School of Liberal Education[1]:					
Biol. 90	25	5,190.98	899.66	6,090.64	243.63
Biol. 130	47	3,758.98	1,641.05	5,400.03	114.89
Chem. 90	22	5,292.00	760.58	6,052.58	275.12
Chem. 130	31	7,308.00	1,076.13	8,384.13	270.46
English 80	28	2,048.00	481.60	2,529.60	90.34
English 90	43	4,162.50	738.97	4,901.47	113.99
English 130	86	7,087.50	1,524.92	8,612.42	100.14
English 160	33	2,772.00	324.71	3,096.71	93.84
English 229	63	3,564.00	629.32	4,193.32	66.56
French 85	14	3,465.00	229.92	3,694.92	263.92
French 90	12	3,168.00	183.94	3,351.94	279.33
French 130	9	2,475.00	137.95	2,612.95	290.33
History 100	10	2,160.00	111.81	2,271.81	227.18
History 200	9	2,160.00	103.19	2,263.19	251.46
Journ. 100	10	1,620.00	111.81	1,731.81	173.18

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[1] All courses in this School, except those indicated by superscript "b", are of eight months' duration.

TABLE IX (continued)

Course	Number of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
Journ. 101	10	$1,620.00	$111.81	$1,731.81	$173.18
Journ. 200	9	1,890.00	103.19	1,993.19	221.46
Journ. 201	9	1,350.00	103.19	1,453.19	161.46
Math. 80	24	3,746.25	367.88	4,114.13	171.42
Math. 85	35	3,315.00	528.81	3,843.81	109.82
Math. 107	6	1,752.30	91.97	1,844.27	307.37
Math. 90	67	7.705.10	1,034.64	8.739.74	130.44
Math. 130	68	5.247.00	1,047.13	6,294.13	92.56
Math. 131	36	3,757.50	551.80	4,309.30	119.70
Physics 90	45	4-894.50	1,568.16	6,462.66	143.61
Physics 130	37	7,290.00	1,299.60	8,589.60	232.15
Pol. Sc. 100	10	1,088.00	97.70	1,185.70	118.57
Psych. 100	31	1,728.45	304.60	2,033.05	65.58
Rec. 100	23	2,160.00	342.70	2,502.70	108.81
Rec. 101[b]	23	1,404.00	342.70	1,746.70	75.94
Rec. 102[b]	23	1,404.00	342.70	1,746.70	75.94
Rec. 200[b]	11	1,188.00	163.90	1,351.90	122.90
Rec. 204/205	11	1,944.00	163.90	2,107.90	191.62
Rec. 207[b]	11	972.00	163.90	1,135.90	103.26
Rec. 214[b]	27	517.56	403.47	921.03	34.11
Science 80	18	3,120.00	626.30	3,746.30	208.13
Science 85	20	3,120.00	687.70	3,807.70	190.38
Soc. St. 130	73	7.741.21	1,267.16	9,012.53	123.46
Soc. 100	89	3,691.09	867.44	4,567.53	51.32
Sub-Total:		$128,877.92	$21,542.71	$150,420.63	

TABLE IX (continued)

Course	Number of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
School of Technology[1]:					
Ag. Ec. 223^b	12	$3,529.20	$551.03	$4,080.23	$340.02
Anim. Sc. 105^b	12	1,059.84	551.03	1,610.87	134.24
App. Sev. 102	8	4,192.50	101.19	4,293.69	536.71
Auto 100	20	6,638.44	2,130.50	8,768.94	438.45
Auto 102	20	13,668.13	2,130.50	15,798.63	789.93
Bus. Kn. 100	6	547.17	75.89	623.06	103.84
Bus. Kn. 106	6	1,575.00	75.89	1,650.89	275.15
Bus. Kn. C-103	16	1,635.52	202.38	1,837.90	114.87
Circ. Th. 132^b	11	2,876.25	393.21	3,269.46	297.22
Design 131^a	13	792.00	357.33	1,149.33	88.41
Draft. 130	13	5,110.60	357.33	5,467.93	420.61
Elec. 100	6	2,437.50	216.59	2,654.09	442.35
Elec. 131^b	16	1,998.75	572.57	2,571.32	160.71
Elex. 130^b	16	2,876.25	572.57	3,448.82	215.55
Elex. 134^b	10	1,998.75	341.28	2,340.03	234.00
English 100	10	1,782.00	126.49	1,908.49	190.85
English 133	19	1,782.00	240.33	2,022.33	106.44
Farm. Mach. 109^b	12	2,119.68	551.03	2,670.71	222.56
Foods C-100	25	2,000.70	1,483.54	3,484.24	139.37
Kitch. C-102	25	6,010.65	1,483.54	7,494.19	299.77
Kitch. C-112	16	538.65	947.74	1,486.39	92.89
Mach. Shop 100	8	975.00	219.63	1,194.63	149.33
Mach. Th. 132^b	21	1,462.50	580.34	2,042.84	97.28
Mach. Th. 133^b	9	877.50	246.95	1,124.45	124.94
Materials 132^b	6	576.00	179.95	755.95	125.99

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[1] Four-month courses in this School are indicated by superscript "b"; six-week courses are indicated by superscript "c".

TABLE IX (continued)

Course	Number of Pupils	Allocated Salary	Indirect Expenditures	Total Direct Expenditures	Direct Cost per Pupil
Math. 114	35	$584.10	$442.72	$1,026.82	$29.34
Math. 132	20	2,250.00	253.00	2,503.00	125.15
Physics 132	27	5,175.00	341.77	5,516.77	204.32
Plant Sc. 107[b]	12	2,119.68	551.03	2,670.71	222.56
Science 108	6	1,701.00	75.89	1,776.89	296.15
Soil Sc. 103[b]	14	2,352.80	638.08	2,990.88	213.63
Struct. 134[b]	6	1,344.00	163.87	1,507.87	251.31
Weld. 100[c]	19	1,215.49	2,191.63	3,407.12	179.32
Weld. 102[c]	19	7,012.44	2,191.63	9,204.07	484.42
Weld. 104[c]	12	1,121.99	1,384.18	2,506.17	208.85
Sub-Total:		$93,937.08	$22,922.63	$116,859.71	
Total:		$327,221.54	$59,065.61	$386,287.15	

Sources: Tables XXXIII and XXXV (Appendix G), and Bursar, Lethbridge Junior College.

200) show that this relationship involved other independent variables such as the proportion of each instructor's workload consumed by a course, and the volume of indirect expenditures allocated to a course, as well as pupil enrolment.

Closer study of Table IX reveals that, when the semestering of courses is taken into account, the direct costs per pupil for courses in the Schools of Business Education and Liberal Education were approximately equal. Four-month courses in the former School had direct costs per pupil ranging from $15.65 (Typing 106, 70 pupils) to $1,133.57 (Data Processing 240, 2 pupils), while full-year courses in the latter School had direct costs per pupil ranging from $51.32 (Sociology 100, 89 pupils) to $307.37 (Math. 107, 6 pupils).

The courses in the School of Technology appear to have had the greatest direct costs per pupil of the three Schools, with those costs for full courses ranging from $29.34 (Math. 114, 35 pupils) to $789.93 (Auto. 102, 20 pupils); the bulk of the courses had direct costs per pupil which were closer to the upper end of this range than to the lower end. The factors which appear to account for the relatively high direct costs per pupil, for courses in this School, were low enrolments and proportionately larger expenditures for supplies (see Table XXXIV, Appendix G).

III. PROGRAM EXPENDITURES

From the data in Table IX, direct program expenditures were obtained by summing the direct costs per pupil for the courses specified (in the College Calendar) as being included on the program under consideration; the "direct per pupil program costs" so generated may be found in Appendix J. The product of this latter unit-cost and the number of pupils enroled on each program yielded the "total direct costs" for each program.

Implementary expenditures were distributed among the programs at this point, and the summation of the total direct costs and the allocated implementary expenditures gave the "total costs" for each program. Finally, the quotient of the total costs and the number of pupils on each program represented the "total cost per pupil" for each program. The results of this entire process, for offered programs, are shown in Table X.

It will be noted in Table X that maximum and minimum costs are indicated for seven of the twenty-one programs; as indicated in Chapter II, these costs resulted from the inclusion of optional courses in program requirements. Again, these maximum and minimum costs were the limits of the possible costs and may not necessarily have been end points of the actual cost continuum.

TABLE X

ACTUAL AND ESTIMATED PROGRAM EXPENDITURES

LETHBRIDGE JUNIOR COLLEGE

Program (1)	Number of Pupils[a] (2)	Imp. Exp. Allocated (3)	Total Direct Costs Minimum (4)	Total Direct Costs Maximum (5)	Total Costs Minimum (6)	Total Costs Maximum (7)	Total Cost per Pupil Minimum (8)	Total Cost per Pupil Maximum (9)
Business Education:								
Bus. Admin (Yr. 1)	78	$49,894.52	$38,921.22	$42,815.76	$88,815.74	$92,710.28	$1,138.66	$1,188.59
Bus. Admin (Yr. 2)								
- Finance	8	5,117.39	$10,050.64		$15,168.03		$1,896.00	
- Marketing	21	13,433.14	14,858.55		28,291.69		1,347.22	
- Office Admin.	18	11,514.12	14,055.84		25,569.96		1,420.55	
Secretarial Sci.:								
- Accounting	24	15,352.16	16,674.96	38,711.76	32,027.12	54,063.92	1,334.46	2,252.66
- Data Proc.	32	20,469.54	24,286.08	53,668.48	44,755.62	74,138.02	1,398 61	2,316.81
- Shorthand	22	14,072.81	15,907.32	37,949.34	29,980.13	52,022.15	1,362.73	2,364.64
Liberal Education								
Pre-University:								
- Remedial	28	17,910.85	13,156.92		31,067.77		1,109.56	
- Grade 10	35	22,388.56	19,744.20		42,132.76		1,203.79	
- Grade 11	71	45,416.30	27,550.84	56,663.68	72,967.64	102,080.48	1,027.71	1,437.75
- Grade 12	86	55,011.90	26,452.54	68,192.64	81,464.44	123,204.54	947.26	1,432.61
Journalism:								
- Year 1	10	6,396.73	8,515.30		14,912.03		1,491.20	
- Year 2	8	5,117.39	6,478.16		11,595.55		1,449.44	
Rec. Leadership:								
- Year 1	25	15,991.83	13,937.00		29,928.83		1,197.15	
- Year 2	12	7,676.08	7,624.20	9,854.76	15,300.28	17,530.84	1,275.02	1,460.90
Technology								
Automotives	16	10,234.77	27,092.48		37,327.25		2,332.95	
Cooking	24	15,352.16	16,229.76		31,581.92		1,315.91	
Drafting	12	7,676.08	18,533.40		26,209.48		2,184.12	
Electronics	13	8,315.75	17,464.07		25,779.82		1,983.06	
Voc. Agr. (Yr. 2)	14	8,955.43	15,862.14		24,817.57		1,772.68	
Welding	23	14,712.49	15,940.84		30,653.33		1,332.75	
	580	$371,010.50	$369,336.46	$519,775.72	$740,356.96	$890,786.22		

Sources; Tables VII and IX; Bursar, Lethbridge Junior College.

An examination of Columns (8) and (9) of Table X reveals that total costs per pupil for programs could have ranged from $947.26 (Grade 12) to $2,364.64 (Shorthand). Although it is difficult to be certain, (because of the simulated figures), the inverse relationship between per pupil costs and pupil enrolment would appear to be clearer at this level of aggregation than at the course level.

Of the three Schools included in the study, the total costs per pupil for programs in the School of Liberal Education had the smallest range of values, the end points being $947.26 (Grade 12) and $1,491.20 (Journalism, Year 1). The range of such costs for the School of Business Education extended from $1,138.66 (Business Administration, Year 1) to $2,364.64 (Shorthand); this reflected the offering of a number of low-enrolment optional courses. Similarly, the values of total costs per pupil for programs in the School of Technology varied from $1,315.91 (Cooking) to $2,322.95 (Automotives); as indicated previously, this last range reflected low program enrolments and relatively high expenditures for supplies.

IV. SUBSIDY EFFECT

In order to determine the subsidy effect of fees and grants, the maximum and minimum "total cost per pupil" for each program (Columns (8) and (9), Table X) were compared arithmetically with the revenue, from fees and grants, which

pertained to each program; the results of this process are displayed in Table XI.

The basic fee for any program except Welding was $60.00; the basic fee for the welding was $30.00. Upon the inclusion of laboratory and shop fees, the overall fees ranged from $65.00 to $90.00. Similarly, under the existing structure, grants amounted to $1,050.00 per full-time pupil; however, since the Welding program was of only six weeks' duration, that program was not eligible for grants.

The above data are summarized in Table XI, and it may be noted that the subsidy effect could range from a subsidy of $167.74 (Grade 12) to a deficit of $1,249.64 (Shorthand). Further it may be noted that fees and grants would be insufficient to meet the costs of all but three programs, even if minimum program costs were to obtain.

V. OVERALL UNIT-COSTS

Unit-costs derived from the overall College input data are displayed in Table XII. The design of the study is partially reflected by three of these unit-costs, in that the sum of the "total direct expenditure per pupil" ($666.03) and the "total implementary expenditure per pupil" ($639.67) equals the "total cost per pupil" ($1,305.69). The fourth unit-cost at the pupil level, the "total indirect expenditure per pupil", was found to have a value of $101.84.

At the course level, the "total cost per course" was

TABLE XI

COST-REVENUE ANALYSIS

LETHBRIDGE JUNIOR COLLEGE

Program	Total Cost per Pupil			Fees	Grants	Subsidy Effet		
	Minimum		Maximum			Maximum		Minimum
Business Education:								
Business Admin. (Yr. 1):	$1,138.66		$1,189.59	$65.00	$1,050.00	$-23.66		$-73.59
Business Admin. (Yr. 2):								
- Finance		$1,896.00		65.00	1,050.00		$-781.00	
- Marketing		1,347.22		65.00	1,050.00		-232.22	
- Office Admin.		1,420.55		65.00	1,050.00		-305.55	
Secretarial Science:								
- Accounting	1,334.46		2,252.66	65.00	1,050.00	-219.46		-1,137.66
- Data Proc.	1,398.61		2,316.81	65.00	1,050.00	-283.61		-1,201.81
- Shorthand	1,362.73		2,364.64	65.00	1,050.00	-247.73		-1,249.64
Liberal Education:								
Pre-University:								
- Remedial		1,109.56		65.00	1,050.00		5.44	
- Grade 10		1,203.79		65.00	1,050.00		-88.79	
- Grade 11	1,027.71		1,437.75	65.00	1,050.00	87.29		-322.75
- Grade 12	947.26		1,432.61	65.00	1,050.00	167.74		-317.61
Journalism:								
- Year 1		1,491.20		70.00	1,050.00		-371.20	
- Year 2		1,449.44		70.00	1,050.00		-329.44	
Rec. Leadership:								
- Year 1		1,197.15		70.00	1,050.00		-77.15	
- Year 2	1,275.02		1,460.90	70.00	1,050.00	-155.02		-340.90
Technology:								
Automotives		2,332.95		70.00	1,050.00		-1,212.95	
Cooking		1,315.91		60.00	1,050.00		-205.91	
Drafting		2,184.12		70.00	1,050.00		-1,064.12	
Electronics		1,983.06		70.00	1,050.00		-863.06	
Voc. Ag. (Yr. 2)		1,772.68		70.00	1,050.00		-652.68	
Welding[a]		1,332.75		90.00	-		-1,242.75	

[a] Six-week program.

Sources: Table X, and Bursar, Lethbridge Junior College.

TABLE XII

OVERALL UNIT-COSTS

LETHBRIDGE JUNIOR COLLEGE

Unit-Cost	Expenditures	Divisor	Amount
Total Cost per Pupil	$757,297.65	580 pupils	$1,305.69
Total Imp. Exp. per Pupil	371,010.50	580 pupils	639.67
Total Direct Exp. per Pupil	386,287.15	580 pupils	666.03
Total Indirect Exp. per Pupil	59,065.61	580 pupils	101.84
Total Cost per Course	757,297.65	93 courses[a]	8,142.99
Total Imp. Exp. per Course	371,010.50	93 courses[a]	3,989.36
Total Cost per Program	757,297.65	21 programs	36,061,79
Total Imp. Exp. per Program	371,010.50	21 programs	17,667.17

[a] Full-year equivalent.

Sources: Tables VII, IX, and X.

$8,142.99, and the "total implementary expenditure per course" was $3,989.36. With the reference to programs, the "total cost per program" was $36,061.79, and the "total implementary expenditure per program" was found to be $17,667.17.

While the relative magnitudes of the unit-costs in Table XII are discussed in Chapter VI, the absolute magnitudes cited above are average expenditures of the College for the period under study; as such, they may be of use in the forecasting of expenditures during subsequent periods of time.

IV. SUMMARY

This Chapter has outlined the technique used in analyzing operational expenditures of Lethbridge Junior College, under the terms of the Problem and Sub-Problem One. Several unit-costs were generated, and the natures of these unit-costs were discussed. Further discussion relevant to the expenditures of this College is to be found in Chapter VI.

CHAPTER V

RED DEER JUNIOR COLLEGE

During the period under study, Red Deer Junior College had a pupil population of 373, and a faculty composed of six administrators and thirty-two full-time and sessional instructors. Fifteen of its eighteen offered programs were of a university-transfer nature; the remaining three programs included Academic Upgrading, Business Administration, and Nursing (Diploma). During the period under study, the College was completing its first year on a newly constructed campus; as a consequence, some expenditures incurred by the College related directly to this occupancy of new quarters.

This Chapter is devoted to an analysis of the expenditures of Red Deer Junior College, under the terms of the Problem and Sub-Problem One.

I. INPUT DATA

A gross breakdown of the input data (from Appendix H) is shown in Table XIII. Of the total expenditure of $558,906.86, instructional salaries comprised 52.7 per cent, implementary expenditures comprised 44.4 per cent, and indirect expenditures comprised the remaining 2.9 per cent.

The data in Table XIV, constituting a summary of implementary expenditures, indicate a relatively straightforward array of implementary departments. It may be seen that

TABLE XIII

GROSS BREAKDOWN OF INPUTS
RED DEER JUNIOR COLLEGE

Input	Amount	Percentage of Total
Implementary Expenditures	$248,343.85	44.4
Indirect Expenditures	15,864.46	2.9
Instructional Salaries	294,698.55	52.7
Total	$558,906.86	100.0

Sources: Tables XXXVI to XLII (Appendix H).

TABLE XIV

SUMMARY OF ACTUAL AND ESTIMATED IMPLEMENTARY EXPENDITURES

RED DEER JUNIOR COLLEGE

Department	Salaries	Supplies	Other	Total
Administration	$49,952.34	$8,385.29	$76,186.44[a]	$134,524.07
Counselling	16,635.00	-	-	16,635.00
Instructors	7,260.00	-	-	7,260.00
Library	33,612.42	-	-	33,612.42
Plant	27,374.06	2,126.65	26,811.65[b]	56,312.36
	$134,833.82	$10,511.94	$102,998.09	$248,343.85

[a] Includes interest and debenture payments.

[b] Includes repairs, maintenance, and insurance.

Sources: Tables XXXVI to XL (Appendix H).

the Administration and Plant Departments accounted for most of the implementary expenditures, the former responsible for 54.2 per cent, of the total volume of $248,343.85. Furthermore, the salaries of implementary personnel comprised some 54.3 per cent of all implementary expenditures, with "other" implementary expenditures (augmented considerably by the expenses incurred by the College's occupancy of a new campus) accounting for a further 41.5 per cent of all implementary expenditures.

II. COURSE EXPENDITURES

As outlined in Chapter II, the salaries of all instructors were distributed to courses on the basis of the Faculty Workload Survey data (see Table XLII, Appendix H). Indirect expenditures were allocated on a "per pupil" basis to relevant courses, and when added to the allocated instructional salaries, yielded the "total direct costs" of courses. The quotient of this latter sum and the number of pupils in each course represented the "direct cost per pupil" of each course. This process is summarized in Table XV, for the courses offered by the College.

An examination of Columns (2) and (6) of Table XV brings forth the general (inverse) dependency of per pupil costs on pupil enrolment, with the direct costs per pupil for full-year courses ranging from $58.07 (Psychology 202, 142 pupils) to $389.32 (Physics 200, 15 pupils). However,

TABLE XV

DIRECT COSTS AT THE COURSE LEVEL

RED DEER JUNIOR COLLEGE

Course (1)	No. Pupils (2)	Allocated Salary (3)	Indirect Expenditures[b] (4)	Total Direct Expenditures (5)	Direct Cost per Pupil (6)
Acct. 102	20	$1,440.00	$136.68	$1,576.68	$78.83
Anth. 202	36	5,082.48	246.02	5,328.50	148.01
Biol. 130	21	2,355.60	143.51	2,499.11	119.01
Biol. 230	95	16,299.36	649.23	16,948.59	178.41
Bus. Ad. 110/111	20	2,699.99	136.68	2,836.67	141.83
Bus. Ad. 130/131	20	2,699.99	136.68	2,836.67	141.83
Bus. Ad. 140/141	20	2,399.99	136.68	2,536.67	126.83
Chem. 230	119	18,691.92	1,892.55	20,584.43	172.98
Chem. 250	25	6,492.00	397.59	6,889.59	275.58
Economics 100/101	20	2,199.99	136.68	2,336.67	116.83
Economics 200	87	5,349.96	594.56	5,944.52	68.33
Ed. Admin. 261[a]	77	4,866.96	526.22	5,393.18	72.88
Ed. Fndn. 201[a]	77	5,214.78	526.22	5,741.00	74.56
Ed. Psych. 276	74	9,630.00	505.72	10,135.72	136.97
English 120[a]	30	1,476.59	205.02	1,681.61	56.05
English 121[a]	19	1,290.95	129.85	1,420.80	74.78
English 200	98	17,901.56	669.74	18,571.30	189.50
English 210	132	27,587.77	902.09	28,489.79	215.83
English 288	18	4,692.01	123.01	4,815.02	267.50
French 200	20	4,677.96	136.68	4,814.64	240.73

TABLE XV (continued)

Course	No. Pupils	Allocated Salary[a]	Indirect Expenditures[b]	Total Direct Expenditures	Direct Cost per Pupil
French 201	13	$4,677.96	$88.84	$4,766.80	$366.68
Geography 201	48	13,518.96	328.03	13,846.99	288.48
History 200	57	10,445.22	389.54	10,834.76	190.08
Math. 101[a]	8	793.91	54.67	848.58	106.07
Math. 180	21	3,329.32	143.51	3,472.83	165.37
Math. 201	68	8,681.84	464.71	9,146.55	134.51
Math. 240	31	3,206.79	211.86	3,418.65	110.28
Math. 243	15	1,608.21	102.51	1,710.72	114.05
Math. 274	14	3,206.79	95.68	3,302.47	235.89
Mech. Eng. 152/153	24	5,737.26	164.02	5,901.28	245.89
P.E. 218/228	291	15,247.44	1,988.70	17,236.14	59.23
Physics 200	15	5,737.26	102.51	5,839.77	389.32
Physics 240	43	5,754.49	293.86	6,048.35	140.66
Pol. Sc. 200	43	5,359.96	293.86	5,643.82	131.25
Psych. 193[a]	33	1,283.99	225.52	1,509.51	45.74
Psych. 202	142	7,275.97	970.43	8,246.40	58.07
Soc. 202	90	5,082.48	615.06	5,697.54	63.31
Stats. 241[a]	12	1,608.21	82.01	1,690.22	140.85
Total:		$245.595.92	14,946.73	$260,542.65	

[a] Four-month course.

Sources: Tables XLI and XLII (Appendix H); Bursar, Red Deer Junior College.

selected samples (e.g., English 200 and English 210) show that this relationship involved variables such as the proportion of each instructor's workload consumed by a course, and the volume of indirect expenditures attributed to a course, as well as pupil enrolment. It is to be noted, as well, that the "direct costs per pupil" for four-month courses were approximately one-half those costs for full-year courses.

Closer examination of Table XV shows that the courses which generally had the highest direct costs per pupil were the 200-level Mathematics and Science courses; this appears to have resulted from relatively low enrolments in some of these courses, and to have resulted as well from the volumes of instructional salaries allocated to some courses (e.g., Physics 200, with fifteen pupils, received $5,737.26; Physics 240, with forty-three pupils, received $5,754.49).

III. PROGRAM EXPENDITURES

From the data in Table XV, direct program expenditures were obtained through the summation of "direct costs per pupil" for the courses specified (in the College Calendar) as being on the program under consideration; the "direct per pupil program costs" as generated may be found in Appendix K. The product of this latter unit-cost and the number of pupils on each program yielded the "total direct costs" for each program.

Implementary expenditures were distributed among the programs at this point, and the summation of the total direct costs and the allocated implementary expenditures gave the

"total cost" of each program. Finally, the quotient of the total costs and the number of pupils on each program represented the "total cost per pupil" for each program. The results of this entire process, for offered programs, are shown in Table XVI.

It will be noted in Table XVI that maximum and minimum costs are indicated for all but three of the eighteen programs; as noted in Chapter II, such costs were computed in the cases of programs including optional courses. These maximum and minimum costs were the limits of the possible costs and may not necessarily have been end points of the actual cost continuum.

The data in Columns (8) and (9) of Table XVI reveal that total costs per pupil for programs could have ranged from $1,187.63 (Academic Upgrading) to $2,258.92 (Arts and Science). Although it is difficult to be certain (because of the simulated figures), the inverse relationship between per pupil costs and pupil enrolment appears to be clearer at this level of aggregation than at the course level. In this connection, it may be seen in Table XVI that ten programs each enroled nine or fewer pupils, yet the per pupil costs of those programs fell well within the overall program cost range cited above. This situation is explained by the observation (in Appendix F) that pupils on the anomalous programs took courses which were common to a number of programs; as a consequence, the per pupil program costs for the programs in question did not differ significantly from those of other programs.

TABLE XVI

ACTUAL AND ESTIMATED PROGRAM EXPENDITURES

RED DEER JUNIOR COLLEGE

Program (1)	Number of Pupils (2)	Imp. Exp. Allocated (3)	Total Direct Costs Minimum (4)	Total Direct Costs Maximum (5)	Total Costs Minimum (6)	Total Costs Maximum (7)	Total Cost per Pupil Minimum (8)	Total Cost per Pupil Maximum (9)
Acad. Upgrading	60	$39,948.07	$31,309.92		$71,257.99		$1,187.63	
Agriculture	8	5,326.41	$ 6,400.32	$9,262.56	$11,726.73	$14,588.97	$1,465.84	$1,823.62
Architecture	2	1,331.60	1,290.56	2,612.46	2,622.16	3,944.06	1,311.08	1,972.03
Arts	56	37,284.87	32,691.68	89,214.72	69,976.55	126,499.59	1,249.58	2,258.92
Bus. Admin.	21	13,981.83	16,720.41		30,702.24		1,462.01	
Commerce	16	10,652.82	10,604.32	16,241.76	21,257.14	26,894.58	1,328.57	1,680.91
Education	78	51,932.49	56,350.50	95,499.48	108,282.99	147,431.97	1,388.24	1,890.15
Engineering	21	13,981.83	21,233.10	21,786.03	35,214.93	35,767.86	1,676.90	1,703.23
Home Economics	5	3,329.00	3,570.10	6,874.95	6,899.10	10,203.95	1,379.82	2,040.79
Law	2	1,331.60	1,598.64	2,400.22	2,930.24	3,731.82	1,465.12	1,865.91
Nursing (B.Sc.)	3	1,997.40	2,294.10	2,551.29	4,291.50	4,548.69	1,430.50	1,516.23
Nursing (Dip.)	31	20,639.84	43,262.49		63,902.33		2,061.37	
Pharmacy	4	2,663.20	4,927.80	5,165.40	7,591.00	7,828.60	1,897.75	1,957.15
Phys. Education	3	1,997.40	2,023.02	3,859.53	4,020.42	5,856.93	1,340.14	1,952.31
Pre-Medicine	9	5,992.21	6,493.50	13,432.68	12,485.71	19,424.89	1,387.30	2,158.32
Pre-Veterinary	3	1,997.40	2,580.54	3,732.78	4,847.94	5,730.18	1,615.98	1,910.06
Rec. Admin.	2	1,331.60	139.31	2,304.88	2,470.91	3,636.48	1,235.46	1,818.24
Science	49	32,624.26	28,605.22	78,062.88	61,229.48	110,687.14	1,249.58	2,258.82
	373	$248,343.85	$273,365.53	$444,294.44	$521,709.38	$692,638.29		

Sources: Tables XIII and XV; Bursar, Red Deer Junior College

IV. SUBSIDY EFFECT

In order to determine the subsidy effect of fees and grants, the maximum and minimum "total cost per pupil" associated with each program (Columns (8) and (9), Table XVI) were compared arithmetically with the revenue from fees and grants which pertained to each program. The data relating to the subsidy effect are shown in Table XVII.

The fees for all programs were $150.00 per full-time pupil. Under the existing structure, grants amounted to $1,050.00 per full-time pupil for all programs except Academic Upgrading; the costs associated with that program were assumed by Canada Manpower.

Upon inspection of the Table XVII, it is immediately apparent that, even if minimum per pupil costs were to have obtained, in no case would program expenditures have been completely subsidized by fees and grants; the deficit could have ranged from $35.46 per pupil (Recreational Administration) to $1,058.92 per pupil (Arts and Science). It should be noted, however, that the minimum deficit under the Arts and Science programs (i.e., $49.58) ranked second after that of Recreational Administration; since the Arts and Science programs enrolled some 28 per cent of the entire pupil population, an appropriate distribution of that population among the programs might have contributed to a minimal overall deficit.

TABLE XVII

COST-REVENUE ANALYSIS

RED DEER JUNIOR COLLEGE

Program	Total Cost per Pupil		Fees	Grants	Subsidy Effect	
	Min.	Max.			Max.	Min.
Acad. Upgrading	$1,187.63		$150.00	–[a]	$-1,037.63	
Agriculture	$1,465.84	$1,823.62	150.00	$1,050.00	$-265.84	$-623.62
Architecture	1,311.08	1,972.03	150.00	1,050.00	-111.08	-772.03
Arts	1,249.58	2,258.92	150.00	1,050.00	-49.58	-1,058.92
Bus. Admin.	1,462.01		150.00	1,050.00	-262.01	
Commerce	1,328.57	1,680.91	150.00	1,050.00	-128.57	-480.91
Education	1,388.24	1,890.15	150.00	1,050.00	-188.24	-690.15
Engineering	1,676.90	1,703.23	150.00	1,050.00	-476.90	-503.23
Home Ec.	1,379.82	2,040.79	150.00	1,050.00	-179.82	-840.79
Law	1,465.12	1,865.91	150.00	1,050.00	-265.12	-665.91
Nursing (B.Sc.)	1,430.50	1,516.23	150.00	1,050.00	-230.50	-316.23
Nursing (Dip.)	2,061.37		150.00	1,050.00	-861.37	
Pharmacy	1,897.75	1,957.23	150.00	1,050.00	-697.75	-757.23
Phys. Education	1,340.14	1,952.31	150.00	1,050.00	-140.14	-752.31
Pre-Med.	1,387.30	2,158.32	150.00	1,050.00	-187.30	-958.32
Pre-Vet	1,615.98	1,910.06	150.00	1,050.00	-415.98	-710.06
Rec. Admin.	1,235.46	1,818.24	150.00	1,050.00	-35.46	-618.24
Science	1,249.58	2,758.92	150.00	1,050.00	-49.58	-1,058.92

[a] Expenses reimbursed by Canada Manpower, via Dept. of Education

Sources: Table XVI and Bursar, Red Deer Junior College.

V. OVERALL UNIT-COSTS

Unit-costs derived from the overall College input data are shown in Table XVIII. The design of the study is partially reflected by three of these unit-costs, as the sum of the "total direct expenditure per pupil" ($832.61) and the "total implementary expenditure per pupil" ($665.80), was found to have a value of $1,498.41.

At the course level, the "total cost per course" was $15,968.77, and the "total implementary expenditure per course" was $7,095.54. Lastly, with reference to programs, the "total cost per program" was $31,050.38, and the "total implementary expenditure per program was $13,796.88.

Although the relative magnitudes of the overall unit-costs are discussed in Chapter VI, the absolute magnitudes cited above represent average expenditures of the College for the period under study; they may therefore be of use in the forecasting of expenditures during ensuing periods of time.

VI. SUMMARY

This Chapter has outlined the technique used in analyzing the operational expenditures of Red Deer Junior College, under the terms of the Problem and Sub-Problem One. Several unit-costs were generated, and the natures of these unit-costs were discussed. Further discussion relevant to the expenditures of this College is to be found in Chapter VI.

TABLE XVIII

OVERALL UNIT-COSTS

RED DEER JUNIOR COLLEGE

Unit-Cost	Expenditure	Divisor	Amount
Total Cost per Pupil	$558,906.86	373 pupils	$1,498.41
Total Imp. Exp. per Pupil	248,343.85	373 pupils	665.80
Total Direct Exp. per Pupil	310,563.01	373 pupils	832.61
Total Indirect Exp. per Pupil	15,864.46	373 pupils	42.53
Total Cost per Course	558,906.86	35 courses[a]	15,968.77
Total Imp. Exp. per Course	248,343.85	35 courses[a]	7,905.54
Total Cost per Program	558,906.86	18 programs	31,050.38
Total Imp. Exp. per Program	248,343.85	18 programs	13,796.88

[a] Full-year equivalent courses, including Nursing (Dip.) courses.

Sources: Tables XIII, XV, and XVI.

CHAPTER VI

COMPARISON AND ANALYSIS OF EXPENDITURES

It is the purpose of this Chapter to bring together measures of the expenditures of the three colleges, in order that their relative magnitudes may be compared, and any differences examined. It is to be noted that, since norms for junior college expenditures do not exist[1], comparisons between expenditures (or unit-costs derived from them) may be based only on the arithmetic differences between them; in other words, probabilistic tests of significance cannot be employed.

I. GROSS INPUTS

A percentage breakdown of the gross input data for the three colleges is displayed in Table XIX, and it may be noted that a curious pattern of expenditures occurred.

Medicine Hat Junior College and Red Deer Junior College expended similar proportions for instructional salaries, namely 55.2 per cent and 52.7 per cent, respectively; Lethbridge Junior College, for the same item, expended 43.2 per cent of its total volume of expenditures. On the other hand, Medicine Hat Junior College and Lethbridge Junior College expended 8.4 per cent and 7.8 per cent of their respective total volumes for indirect expenditures; Red Deer

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[1] See R. W. Kettler, "What's Wrong With the Unit-Cost Idea?" College and University Business, 14 (May, 1953), p.17.

TABLE XIX

PERCENTAGE BREAKDOWN OF INPUT DATA THREE JUNIOR COLLEGES

Input	Medicine Hat %	Lethbridge %	Red Deer %
Implementary Exp.	36.4	49.0	44.4
Indirect Exp.	8.4	7.8	2.9
Instr. Salaries	55.2	43.2	52.7
Total	100.0	100.0	100.0

Sources: Tables I, VII, and XIII.

Junior College expended but 2.9 per cent. It would thus appear that Medicine Hat Junior College expended the most common proportions of total volume of expenditures over the categories of instructional salaries and indirect expenditures.

Upon consideration of the portion of total volume taken up by implementary expenditures, however, it was found that Lethbridge Junior College and Red Deer Junior College expended 49.0 per cent and 44.4 per cent, respectively; Medicine Hat Junior College expended 36.4 per cent of its total volume.

In spite of the apparent absence of a consistent pattern, the proportions of total volume of expenditures which were consumed by implementary services, indirect expenditures, and instructional salaries are generally of the same order of magnitude; this in itself may be significant.

II. IMPLEMENTARY EXPENDITURES

It is of interest to examine the percentage breakdown of selected implementary expenditures shown in Table XX; because of the differing administrative structures of the colleges, it was necessary to place the implementary expenditures in four categories which were common to all colleges.

It is evident that the proportion of total implementary expenditures consumed by Counselling services was fairly consistent, the proportions ranging through 5.1 per cent (Medicine Hat) to 5.4 per cent (Lethbridge), and 6.7 per cent (Red Deer). A similar situation obtained for Library expenditures,

TABLE XX

PERCENTAGE BREAKDOWN OF IMPLEMENTARY EXPENDITURES

THREE JUNIOR COLLEGES

Department	Medicine Hat %	Lethbridge %	Red Deer %
Administration[a]	75.4	57.4	57.1
Counselling	5.1	5.4	6.7
Library	12.1	0.1[b]	13.5
Physical Plant	7.4	37.1	22.7
Total	100.0	100.0	100.0

[a] Includes debenture payments, debt charges, etc.

[b] See text, p. 83.

Sources: Tables II, VIII, and XIV.

as the proportion for this service ranged from 12.1 per cent (Medicine Hat) to 13.5 per cent (Red Deer). It is noted that Library expenditures at Lethbridge Junior College were virtually nonexistent during the period under study; the operational expenses of that College's library were apparently borne by the University of Lethbridge.

The proportions of implementary expenditures made for Physical Plants varied considerably, ranging through 7.4 per cent (Medicine Hat), 22.7 per cent (Red Deer), and 37.1 per cent (Lethbridge). It was anticipated that Medicine Hat Junior College would have expended a minimal proportion for this category of expense, since, as mentioned earlier, its premises were rented. The factors associated with the difference in the proportions expended by Lethbridge Junior College and Red Deer Junior College were more difficult to isolate; however, it may be noted (Tables XXX and XXXVII, in Appendices I and H) that the Physical Plant Departments of these two colleges differed considerably, with that of the former college having employed five full-time personnel, and that of the latter college having employed but one full-time person.

Of their total volume of implementary expenditures, Red Deer Junior College expended 57.1 per cent, and Lethbridge Junior College expended 57.4 per cent, for Administrative services; the proportion for those services at Medicine Hat Junior College was 75.4 per cent.

III. OVERALL UNIT-COSTS

The overall unit-costs generated for each College are summarized in Table XXI. It may be noted that there was considerable variation in the magnitudes of the unit-costs, with those of Medicine Hat Junior College generally being the least in magnitude, and those of Red Deer Junior College generally being the greatest in magnitude.

Of the eight unit-costs shown in Table XXI, the "total direct expenditure per pupil"displayed the least variation; the magnitudes of this unit-cost ranged through $626.30 (Medicine Hat), $666.03 (Lethbridge), and $832.61 (Red Deer). Two factors appear to be associated with the variation of the magnitude of this unit-cost: the average annual salaries of instructors, and the pupil-instructor ratio.

It may be computed[2] that the average annual salaries for full-time instructors at Medicine Hat Junior College, Lethbridge Junior College, and Red Deer Junior College were $8,842.92, $10,389.84, and $10,939.70, respectively; a direct association with the above unit-costs is indicated. Secondly, the derived pupil-instructor ratios[3] were 11.7 (Red Deer), 14.0 (Medicine Hat), and 14.2 (Lethbridge); an inverse relationship between pupil-instructor ratio and direct cost per pupil is indicated.

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[2] Tables XXVI (p. 120), XXXV (p. 128) and XLII (p. 138).

[3] From data on pages 29, 44, and 61.

TABLE XXI

OVERALL UNIT-COSTS

THREE JUNIOR COLLEGES

Unit-Cost	Medicine Hat	Lethbridge	Red Deer
Total Cost per Pupil	$985.24	$1,305.69	$1,498.41
Total Imp. Exp. per Pupil	358.94	639.67	665.80
Total Direct Exp. per Pupil	626.30	666.03	832.61
Total Indirect Exp. per Pupil	82.84	101.84	42.53
Total Cost per Course	5,969.94	8,142.99	15,968.77
Total Imp. Exp. per Course	2,174.72	3,989.36	7.095.54
Total Cost per Program	17,908.10	36,061.79	31,050.38
Total Imp. Exp. per Program	6,542.17	17,667.17	13,796.88

Sources: Tables VI, XII, and XVIII.

The values of the "total indirect expenditure per pupil" were found to be $42.53 (Red Deer), $82.84 (Medicine Hat), and $101.84 (Lethbridge). That the smallest value of the three would be found for Red Deer Junior College might have been anticipated, since the data in Table XIX (page 80) show that that college expended the smallest proportion of total volume for indirect expenditures.

It is indicated in Table XXI that Lethbridge Junior College and Red Deer Junior College had implementary expenditures and pupil populations in an almost direct ratio, for the "implementary expenditures per pupil" of those colleges were $639.67 and $665.80, respectively. The magnitude of that unit-cost for Medicine Hat Junior College was $358.94, again a reflection of that college's proportionately low expenditures for Physical Plant operations.

The overall "total costs per pupil" of $985.24 (Medicine Hat), $1,305.69 (Lethbridge), and $1,498.41 (Red Deer) were directly related to the indirect, direct, and implementary expenditures per pupil, since these latter three unit-costs were, by definition, subsumed by the total costs per pupil.

Variations in the remaining four unit-costs in Table XXI (i.e., the total cost per course, the implementary expenditure per course, the total cost per program, and the implementary expenditure per program) were due primarily to variations in overall expenditures and in the numbers of courses and programs offered. As stated previously, these figures

represented average expenditures, and their major application may be found in the forecasting of future expenditures.

IV. ACTUAL AND SIMULATED COSTS

It was noted in earlier Chapters that the maximum and minimum total program costs generated by the methodology of this study were simulated, with the actual expenditures falling between the values generated. It is of interest to note this effect for the Colleges included in this study; the appropriate figures are displayed in Table XXII.

It may be also noted that the actual costs were closer to the minimum simulated costs than to the maximum simulated costs. This would appear to be explained by the general observation that large course enrolments (which may indicate either a preference for a course, or a lack of options in a program) led to low per pupil costs for courses; thus, when a number of courses having low per pupil costs were put together as a program, the per pupil program cost was correspondingly lower. Since all pupils did not follow precisely the same course pattern, however, this tendency for the actual and minimum simulated costs to coincide was offset; it is interesting to note in this connection that the College for which the actual and minimum simulated costs were closest was Lethbridge Junior College, the College whose programs generally offered the least number of options.

TABLE XXII

ACTUAL AND SIMULATED EXPENDITURES

THREE JUNIOR COLLEGES

College	Minimum Simulated	Actual	Maximum Simulated
Medicine Hat	$263,631.74	$304,437.84	$450,473.49
Lethbridge	740,346.96	757,297.65	890,786.22
Red Deer	521,709.38	558,906.86	692,638.29

Sources: Tables I, IV, VII, X, XIII, and XVI.

V. SUBSIDY EFFECT

It may be observed that a crude relationship existed between a subsidy effect for program costs and the total cost per pupil, with the distribution of pupil population among programs being a key variable. Thus it was noted that, given near-minimum program cost patterns and appropriate pupil population distributions, virtually all of the expenditures of Medicine Hat Junior College ought to have been subsidized by fees and grants. This was not the case for Lethbridge Junior College or Red Deer Junior College, with only three programs of the former college, and none of the latter college, being subsidized by fees and grants.

In this connection, it may also be noted that the fact that fee structures were not related to total expenditures or program expenditures did not serve as a deterrent to deficit: the fee structures of Medicine Hat Junior College and Red Deer Junior College were identical, yet the subsidy effect for the former college differed radically from that of the latter.

VI. GENERAL OBSERVATIONS

Semestering of Courses

Each of the three colleges included in this study offered some courses on a semester basis, this situation occurring most commonly at Lethbridge Junior College. It has been observed in preceding Chapters that the per pupil

costs of semestered courses were approximately one-half the corresponding costs of full-year equivalent courses. It would appear that the practice of offering courses on a semester basis is economically reasonable.

Unit-Costs and Pupil Enrolment

It has been observed in preceding Chapters that a general, but inverse, relationship appeared to exist between unit-costs (per pupil) and the number of enrolled pupils; this relationship appeared to be more clearly apparent as the aggregation of expenditures and pupils moved from the course level to the program level.

It was also observed that independent variables other than pupil enrolment were in operation (namely, the distribution of instructors' workloads, allocated implementary expenditures, and allocated indirect expenditures). That this observation merits consideration may be seen especially at the college level, where, according to the data in Table XXI (page 85) the minimum value of the "total cost per pupil" obtained for the college which enrolled the smallest pupil population.

VII. SUMMARY

This Chapter has provided a comparative overview of the relative magnitudes of the expenditures, and unit-costs derived from those expenditures, of the three colleges included in this study. Overall expenditure inputs were dis-

cussed, an analysis was made of implementary expenditures, and the sets of overall unit-costs generated for each college was examined. The natures of simulated costs and the subsidy effect were discussed, and observations about the semestering of courses and the natures of "per pupil" unit-costs were presented.

CHAPTER VII

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Under the terms of the Problem, the primary purpose of this study was to generate a set of selected unit-costs for each of three junior colleges, based on the operating expenditures of those colleges for selected programs over a specific period of time; these unit-costs have been compiled in Chapters III, IV, and V. A second purpose of the study was to compare the unit-costs related to programs with the college revenues from fees and grants, in order that any subsidy effect be revealed; the results of this analysis are also to be found in Chapters III, IV, and V. Lastly, it was a purpose of the study to compare the set of unit-costs generated for each college with that of the other two colleges; the results of this comparison are found in Chapter VI. Specific conclusions, implications, and recommendations are noted below.

I. CONCLUSIONS

On the basis of this study, the following conclusions appear to be warranted:

1. The usefulness of per pupil unit-costs as measures of junior college expenditures, as derived under the methodology of this study, is limited by the effect of variables other than pupil enrolment. In particular, the

distributions of instructors' workloads, the salary levels of instructors, and the magnitudes of allocated indirect and implementary expenditures each or all contribute to variations among per pupil unit-costs.

2. Variation which occurs among per pupil direct expenditures for instruction is directly associated with instructional salary levels, and inversely associated with pupil-instructor ratios.

3. The degree to which program and college expenditures may be subsidized by fees and grants depends very much upon the distribution of pupil population among programs; programs enrolling a larger proportion of the entire pupil population tend to have lower per pupil expenditures, since the larger population diminishes the per pupil costs of courses required for that program. As a consequence, a per pupil subsidy for a heavily populated program may offset the deficit which obtains for programs having low enrolments.

4. When maximum and minimum (simulated) operating costs are obtained for programs which include optional courses, the actual operating cost is nearer the minimum cost than the maximum cost. Furthermore, there is some indication that as the number of optional courses decreases, so too does the actual operating cost.

II. IMPLICATIONS

This study suggests the following implications:

1. An effective method of achieving near-minimum overall per pupil expenditures involves the diminishing of implementary expenditures, particularly those for Physical Plant operations. While this is not to suggest that junior colleges ought to strive to obtain a campus in rented quarters, it must be noted that the absence of Physical Plant expenditures significantly diminished the per pupil implementary expenditures for one college included in this study.

2. A uniform grant structure applied to a number of junior colleges which have a variety of expenditure patterns insufficiently offsets the expenditures of those colleges. The findings of this study imply that measures of both direct and implementary expenditures ought to be taken into account in the formulation of a flexible grant structure.

3. The methodology of this study is adequate for the generation of a variety of unit-costs, any or all of which may aid the college administrator in decision-making; however, the limitations of the interpretations to be placed upon these unit-costs must be known. The usefulness of such unit-costs would become even more apparent were the Colleges to utilize a program approach in budgeting and cost analysis.

4. To ensure minimum per pupil operating costs, the number of optional courses in programs ought to be related to the number of pupils in each program; furthermore, such a relationship would depend on the determination of minimum

numbers of pupils necessary for the effective economic offering of courses.

5. The use of sessional instructors may be economically advantageous, particularly if a variety of course offerings is desired.

III. RECOMMENDATIONS

In the light of the findings of this study, the following recommendations are made:

1. That studies such as the one herein be repeated during ensuing years, with two purposes: (a) to alter the process of allocating implementary expenditures, thus allowing a determination to be made of the effect of this process on the methodology as a whole, and (b) to allow data of a time-series nature to accrue.

2. That a study be made of junior colleges to determine any relationship between total per pupil costs and numbers of supportive personnel, instructors, and pupils.

3. That work progress on a simulation model for junior college cost analysis. Such a model would permit investigation in two areas: (a) the relationship(s) between overall inputs and overall outputs, and (b) the effect, on outputs, of variations in program requirements.

4. That work progress on the determination of specific inter-college differences to be taken into account in the formulation of fee and grant structures.

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BIBLIOGRAPHY

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APPENDIX A

PROGRAMS INCLUDED IN THE STUDY

Lethbridge Junior College

Business Education
- Secretarial Science
- Business Administration

Liberal Education
- Pre-University
- Journalism
- Recreational Leadership

Technology
- Automotives
- Cooking
- Drafting
- Electronics
- Vocational Agriculture
- Welding

Red Deer Junior College

Academic Upgrading
Agriculture
Architecture
Arts
Commerce
Education
Engineering
Household Economics
Law
Nursing (B.Sc.)
Nursing (Dip.)
Pharmacy
Physical Education
Pre-Medicine
Pre-Veterinary Medicine
Recreational Administration
Science

Medicine Hat Junior College

Academic Upgrading
Agriculture
Arts
Commerce
Dentistry
Education
Engineering
Household Science
Law
Medicine
Music
Nursing
Pharmacy
Physical Education
Science
University Administration

Programs Included In The Study

APPENDIX B

DATA COLLECTION FORMS

March, 1969.

INSTRUCTION FOR UNIT - COST STUDY FORMS

Form #1

This form is designed to summarize instructional and administrative salary data. The data are requested to be in monthly form so that prorating through until the end of April and the end of August will be possible. It is hoped that this form will have been returned to the undersigned by March 31, 1969, in order that preliminary compilation of data may begin as soon as possible.

Col.1 : The Faculty member's name, so that instructors and courses can be later coordinated with the Workload Survey.

Col.2 : Descriptive code, identifying the member's official status in the College.

Col.3 : Courses taught (if any) by member, including multiple sections of any course. Give descriptive name and number of the course(s).

Col.4 : Indicate the duration of the course, if it was offered in the Fall or Spring Term only.

Col.5 : Number of pupils registered (i.e. carried on Registrar's roll) in each course listed.

Col.6 : The basic (gross) monthly salary paid on behalf of the Faculty member listed. In the case of 'matching' fringe benefits, include the College contribution under Col.9.

Col.7 : Salaries or allowances not covered in Col.6, but applicable to the programs included in the study.

Col.8 : Indicate the Faculty member as being Sessional (S) or Permanent (P).

Col.9 : Use for idiosyncracies of the salary arrangements. For example, if a Department Head receives an instructional salary plus an administrative allowance, show the breakdown in this Column.

Form #2

This form is designed to gather data relating to direct (and operating) expenditures for programs. It is constructed so as to simplify the categorization of expenditures, but, according to the system of accounting at each College, may

require minor alteration. Since the Study refers to expenditures up to April 30, 1969, the form may not be fully completed until that time; however, it is being submitted now in order that a start may be made in the collection of this data. Refer to the entire period of study.

Col.1 : List the Program to which the expenditure is attributed.

Col.2 and 3 : Supplies and equipment directly attributable to Programs. For example, chemical supplies, clerical supplies, and certain forms of replaced equipment may be indicated; the criterion is that the expenditure was an operational expenditure.

Col.4 : Gross monthly salaries of personnel (if any) assigned specifically to a particular Program, on a full-time basis. Such personnel would not have been included on Form #1 as Faculty members.

Col.5 : Certain miscellaneous expenditures (e.g. travel allowances) may not be classified under previous headings; indicate such expenditures in this Column.

Form #3

This form refers to the implementary (supportive or overhead) departments of the College, for example, plant and maintenance, administration, library, and counselling. It refers, as does Form #2, to the entire period under study, and thus likewise may not be fully completed until April 30, 1969. Again depending on the system of accounting, the classification of the implementary departments may vary from College to College; however, a breakdown under at least the four headings given directly above is desireable.

GENERAL NOTES

The basic requirement of the Study is that all operational expenditures for the period Sept. 1, 1968 to April 30, 1969 be gathered. It is hoped that the forms submitted will meet this requirement; if this proves not to be the case in any one of the three Colleges included, the writer hopes that the forms will be amended and/or added to in order that all data be collected.

Your cooperation in this Study is sincerely appreciated!

W.L. Workman,
Graduate Student,
Dept. of Educational Administration,
University of Alberta.

Form #1 : FACULTY AND COURSE DATA

A. COLLEGE: Red Deer __
Medicine Hat __
Lethbridge __

B. CODE (Col.#2):
1. Administrator
2. Department Head
3. Instructor
4. Librarian
5. Counsellor

C. NOTE: Unless a course was given through both terms, indicate Fall (F) or Spring (S) in Col. #4

(1) FACULTY MEMBER	(2) CODE	(3) COURSE(S) TAUGHT	(4) F-S	(5) NO. PUPILS	(6) GROSS MONTHLY SAL	(7) OTHER SALARY	(8) S or P	(9) COMMENTS

FORM #2 : PROGRAM DATA

PROGRAM	SUPPLIES	EQUIPMENT	SALARIES	OTHER (SPECIFY) (Item) (Amount)
				$

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FORM #3 : IMPLEMENTARY DEPARTMENT DATA

Implementary Department: ____________________________________

No. Faculty Members: ______ .

No. Clerical Members: ______.

Salaries. Total, for period Sept. 1, 1968 to
April 30, 1969 $____________

Supplies: $____________.

and/or

Clerical supplies: $____________.

Repairs and/or maintenance: $____________.

Overhead (telephone, postage, etc.): $____________.

Other Expenditures (Specify):

______________________________	$____________
______________________________	$____________
______________________________	$____________
______________________________	$____________
______________________________	$____________
______________________________	$____________
______________________________	$____________

* * *

APPENDIX C

FACULTY WORKLOAD SURVEY

FACULTY WORKLOAD SURVEY

(Spring 1969)

Dear Sir or Madam:

The Faculty Workload Survey contained herein is an integral portion of a cost-analysis study being made of your College, under the auspices of the Board of Post-Secondary Education. The information which you are requested to provide will become a basis for the allocation of instructional and other costs among courses and/or programs offered by your College; because of the importance of this information, please give thoughtful consideration to your responses. It is essential that the survey be completed as fully and accurately as possible by each member of the Faculty.

A code will be used in place of Faculty members' names, in order that workload data may be coordinated with other course data; since the names of Faculty members will not be required for the overall study, this coding will be done by College personnel.

INSTRUCTIONS

The Survey refers to the entire 1968-1969 session, and you will note the appropriate format. As well, the ultimate basis upon which you are asked to indicate the utilization of your time is percentage in nature, and refers to your total (official) time. Thus, if your official appointment is that of Instructor, the sum of the figures in Col. (8) will be '100' for each term; likewise, if you spend 35% of your time in instruction, the figures in Col. (8) will yield a sum of '35' for each term.

The Columns on the form are designed primarily as guides in your computations; however, all applicable columns should have an entry. Cols. (4),(5), and (6) refer respectively to the time spend in (a) small group (non-formal) instruction; (b) preparation of lectures and laboratory sessions, and marking; and (c) individual consultation with pupils of the course you have listed. The totals in Col. (7) should be obtained by adding across the form, thereby finding the total number of hours, by course and/or section.

Lastly, please complete the overall breakdown as indicated at the bottom of the form.

Thank you very much for your cooperation.

FACULTY WORKLOAD SURVEY

Course Name, No. & Section No.	Hrs. Lect. per Week	Hrs. Lab. per Week	Hrs. Seminar Week	Hrs. Prep. Week	Hrs. Indiv. Help/ Week	Total Hours	% of your TOTAL Time
Fall Term:							
Totals (Columns)							
Spring Term:							
Totals (Columns)							

Gross Breakdown of time, according to your official appointment:

	Fall	Spring	
Instruction	______%	______%	
Administration	______%	______%	(from Col. 8)
Library	______%	______%	
Counselling	______%	______%	
Department Head	______%	______%	

College:
Lethbridge __
Mt. Royal __
Gr. Prairie __
Medicine Hat __
Red Deer __

Faculty Member (name or code):

____

APPENDIX D

WORKSHEETS

WORKSHEET #1

Course Data

COURSE ____________ Fall _____ Spring_____

Number of Sections _____

Faculty Member	F or S	Salary	% Time	Alloc. Salary	Other Expenditures
TOTALS					

Total number of pupils _____

Total expenditures $________

Cost/pupil $_______

Sheet _______ of _______

WORKSHEET #2

College ______________________

Program ______________________ No. of Pupils ____________

Implementary Expenditure: $____________

Grants $______________ Fees $___________

Course Description (   )

#1 __________________________

#2 __________________________

#3 __________________________

#4 __________________________

#5 __________________________

#6 __________________________

#7 __________________________

#8 __________________________

#9 __________________________

APPENDIX E

COMPUTER FUNCTIONS

```
      ∇ COURSE
[1]     'ROWS'
[2]     R←⎕
[3]     MAT←(R,5)ρ0
[4]     'I.D.'
[5]     A←⎕
[6]     MAT[;1]←A
[7]     'SALARY'
[8]     B←⎕
[9]     MAT[;2]←B
[10]    'TIME'
[11]    C←⎕
[12]    MAT[;3]←C
[13]    MAT[;4]←D←12×B×(C÷100)
[14]    'OTHER'
[15]    E←⎕
[16]    MAT[;5]←E
[17]    'PUPILS'
[18]    P←⎕
[19]    ('TOTAL    ';T←(+/D)++/E)
[20]    ('COST PER PUPIL    ';U←T÷P)
[21]    MAT
[22]    X←P,T,U
[23]    'REM. TO TYPE COURSE ← X'
      ∇
```

```
      ∇ PROGRAM
[1]     'ROWS'
[2]     R←⎕
[3]     MAT←(R,3)ρ0
[4]     N←(R,3)ρ0
[5]     K←1
[6]     ('COURSE  ';K)
[7]     N[K;]←⎕
[8]     →(R≥K←K+1)/6
[9]     MAT[;1]←N[;1]
[10]    MAT[;2]←N[;2]
[11]    MAT[;3]←N[;3]
[12]    'IMP. EXP.  '
[13]    B←⎕
[14]    'PUPILS  '
[15]    C←⎕
[16]    'FEES  '
[17]    F←⎕
[18]    'GRANTS  '
[19]    G←⎕
[20]    ('TOTAL DIRECT  ';N←C×(+/MAT[;3]))
[21]    ('TOTAL DIRECT PER PUPIL  ';L←+/MAT[;3])
[22]    ('TOTAL PROGRAM  ';M←B+(C×L))
[23]    ('AVG. TOTAL PER PUPIL  ';Q←M÷C)
[24]    ('SUBSIDY EFFECT  ';W←F+G-Q)
[25]    MAT
[26]    X←M,B,C,R
[27]    'REMEMBER TO TYPE PROG←X'
      ∇
```

```
     ∇ COLLEGE
[1]    'ROWS'
[2]    R←⎕
[3]    MAT←(R,4)⍴0
[4]    K←1
[5]    ('PROGRAM ';K)
[6]    MAT[K;]←⎕
[7]    →(R≥K←K+1)/5
[8]    'NO. COURSES'
[9]    N←⎕
[10]   ('TOTAL PER PROG. ';A←(+/MAT[;1])÷R)
[11]   ('TOTAL PER COURSE  ';B←(+/MAT[;1]÷N))
[12]   ('TOTAL PER PUPIL ';C←(+/MAT[;1])÷(+/MAT[;3]))
[13]   ('TOTAL IMP. PER PROG. ';D←(+/MAT[;2])÷R)
[14]   ('TOTAL IMP. PER COURSE  ';E←(+/MAT[;2]÷N))
[15]   ('TOTAL IMP. PER PUPIL ';F←(+/MAT[;2])÷(+/MAT[;3]))
[16]   MAT
     ∇
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APPENDIX F

INPUT DATA, MEDICINE HAT JUNIOR COLLEGE

TABLE XXIII

ACTUAL AND ESTIMATED IMPLEMENTARY EXPENDITURES MEDICINE HAT JUNIOR COLLEGE

Item	Amount
Salaries[a]	$66,686.89
Clerical Supplies[b]	6,725.24
Repairs and Maintenance	2,184.76
Rental	6,000.00
Insurance	551.00
Advertising	1,916.86
Other Admin. Exp.	3,352.68
Other Instr. Exp.	4,458.96
Library (Operating)	13,392.94
Counselling[c]	5,641.71
Total	$110,911.04

[a] Includes 3 Administrators and 7 Clerical Staff.

[b] Includes Telephone, Postage, etc.

[c] Instructors #101 and #102.

Source: Bursar, Medicine Hat Junior College.

TABLE XXIV

ACTUAL AND ESTIMATED DIRECT EXPENDITURES BY PROGRAM MEDICINE HAT JUNIOR COLLEGE

Program	Supplies	Equipment	Salaries	Total
Academic Upgrading - Marking	-	-	$5,055.01	$5,055.01
Music	$558.47	$3,356.57	-	3,915.04
Physical Education				
- Basketball	-	-	1,838,24[a]	1,838.24
- Hockey	-	-	1,633.68[b]	1,633.68
Total	$558.47	$3,356.57	$8,526.93	$12.441.97

[a] Instructor #109, [b] Instructor #116.
Source: Bursar, Medicine Hat Junior College.

TABLE XXV

INDIRECT EXPENDITURES BY INSTRUCTIONAL DEPARTMENT MEDICINE HAT JUNIOR COLLEGE

Instructional Department	Supplies	Equipment	Salaries	Total
Biology	$1,364.69	$1,306.71		$2,671.40
Business Admin.	51.45	-	-	51.45
Chemistry	500.87	58.05	$1,200.00[a]	1.758.92
Drama	278.35	223.33	-	501.68
Economics	51.45	113.53	-	164.98
English	80.62	-	-	80.62
French	157.85	14.84	-	172.69
German	75.05	-	-	75.05
Mathematics	54.45	233.30	-	287.75
Phys. Ed.	963.90	894.66	-	2,858.56
Physics	208.88	149.06	1,200.00[a]	1,557.94
Psychology	230.15	1,191.80	-	1,421.95
Secretarial Sc.	277.39	1,127.05	1,147.88[b]	2,552.32
Total	$4.295.10	$5,312.33	$3,547.88	$13,155.31

[a] Laboratory Assistant, [b] Department Head Release Time.
Source: Bursar, Medicine Hat Junior College.

TABLE XXVI

FACULTY AND COURSE WORKLOAD DATA

MEDICINE HAT JUNIOR COLLEGE

Faculty Member	Annual Salary[b]	Activity	Percentage[b] Time
101	$9,296.20	English 240	55.0
		English 285	28.0
		Counselling	17.0
102	10,068.40	Counselling	40.0
		Psych. 202	20.0
		Ed. Psych. 212	40.0
103[a]	5.425.65	Shorthand 211/212	34.0
		Typing 201/202	19.0
		Typing 10/20/30	18.0
		Sec. Proced. 221/222	29.0
104	9,534.12	English 240	75.0
		English 111/112	25.0
105	12,984.24	Chemistry 130	18.7
		Chemistry 250	25.3
		Chemistry 230	56.0
106	7,734.12	Math 211	50.0
		Math 111	25.0
		Math 100	25.0
107	8,391.12	Bus. Admin. 103	25.0
		Bus. Admin. 111/112	25.0
		Bus. Admin. 101/102	25.0
		Bus. Admin. 131/132	25.0
108	11,549,96	Sec. Sc. 101/102	15.6
		Sec. Sc. 111/112	29.0
		Sec. Sc. 230/231	21.0
		Data Proc. 101/102	24.0
		Administration	10.4
109	9,291.20	History 205	26.0
		History 105	15.0
		Phys. Ed. 218	39.0
		Basketball	20.0
110	10,666.20	Biology 200	66.7
		Biology 100	33.3

TABLE XXVI (Continued)

Faculty Member	Annual Salary[b]	Activity	Percentage[b] Time
111	$7,699.92	Physics 240	25.0
		Physics 200	25.0
		Physics 100	25.0
		Eng. Mech. 202	25.0
112	7,734.12	French 201	25.9
		French 200	25.9
		French 100	29.7
		English 111/112	18.5
113	9,891.20	Acct. 101	35.1
		Acct. 201	23.1
		Bus. Admin. 121/122	15.6
		Bus. Admin. 141	6.8
		Bus. Admin. 142	9.6
		Comm. & Change	9.8
114	10,666.36	Economics 200	50.0
		Economics 100	25.0
		Pol. Sc. 20	25.0
115	7,968.36	English 140	50.0
		Drama 220	50.0
116	8,168.40	P.E. 203	8.0
		P.E. 204	20.0
		P.E. 311	8.0
		P.E. 205	8.0
		P.E. 228	36.0
		Hockey	20.0
117	14,216.20	Ed. Admin. 261	10.0
		Administration	90.0
118[a]	1,000.00	German 200	100.0
119[a]	1,000.00	Ed. Foundations 201	100.0
120[a]	1,000.00	Geography 201	100.0
121	11,899.92	Academic Upgrading	100.0
122	10,999.92	Academic Upgrading	100.0
123[a]	3,800.00	Academic Upgrading	100.0
Total	$190,985.61		

Allocated to Instruction: $167,929.52 (Tables III, IV, VII)

Allocated to Administration, Counselling, etc.: $23,056.09

[a] Sessional Instructor, [b] Includes Fringe Benefits.

Sources: Faculty Workload Survey and Bursar, Medicine Hat Junior College.

APPENDIX G

INPUT DATA, LETHBRIDGE JUNIOR COLLEGE

TABLE XXVII

ACTUAL AND ESTIMATED EXPENDITURES OF BURSAR'S OFFICE LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Salaries	$47,832.00
Supplies	1,804.00
Repairs/Maintenance	364.00
Overhead	365.00
Employee Benefits	1,861.00
Travel	189.00
Total	$52,415.00

Source: Bursar, Lethbridge Junior College.

TABLE XXVIII

ACTUAL AND ESTIMATED EXPENDITURES FOR COUNSELLING LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Salaries	$17,989.50
Supplies	1,133.00
Overhead	48.00
Employee Benefits	146.00
Travel	822.00
Total	$20,138.50

Source: Bursar, Lethbridge Junior College.

TABLE XXIX

ACTUAL AND ESTIMATED EXPENDITURES FOR FACULTY PERSONNEL LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Salaries	$29,143.50
Supplies	8,283.00
Employee Benefits	944.00
Advertising	2,103.00
Total	$40,473.50

Source: Bursar, Lethbridge Junior College.

TABLE XXX

ACTUAL AND ESTIMATED EXPENDITURES FOR MAINTENANCE LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Salaries[a]	$33,424.50
Supplies	72.00
Repairs/Maintenance	12,558.00
Caretaking	35,664.00
Utilities	42,719.00
Security	11,829.00
Employee Benefits	1,257.00
	$137,523.50

[a] Includes five full-time personnel plus casuals.

Source: Bursar, Lethbridge Junior College.

TABLE XXXI

ACTUAL AND ESTIMATED EXPENDITURES OF PRESIDENT'S OFFICE

LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Salaries	$31,495.50
Supplies	2,599.00
Overhead	199.00
Employee Benefits	823.00
Travel	5,183.00
Car Expense	1,019.00
Advertising	2,759.00
Dues	260.00
President's Fund	671.00
	$45,008.50

Source: Bursar, Lethbridge Junior College.

TABLE XXXII

ACTUAL AND ESTIMATED EXPENDITURES OF REGISTRAR'S OFFICE

LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Salaries	$14,596.50
Supplies	147.00
Overhead	39.00
Employee Benefits	188.00
Travel	16.00
Total	$14,986.50

Source: Bursar, Lethbridge Junior College.

TABLE XXXIII

ACTUAL AND ESTIMATED OTHER EXPENDITURES

LETHBRIDGE JUNIOR COLLEGE

Item	Amount
Supplies	$ 6,406.00
Overhead	1,480.00
Library	379.00
Audit	1,750.00
Legal Expense	1,271.00
Insurance	14,972.00
Workmen's Compensation	1,972.00
Debt Charges	32,245.00
Total	$60,465.00

Source: Bursar, Lethbridge Junior College.

TABLE XXIV

INDIRECT EXPENDITURES BY PROGRAM

LETHBRIDGE JUNIOR COLLEGE

Instructional Program	Supplies	Equipment	Salaries	Other	Total
Liberal Education	-	-	$6,333.71[b]	-	$6,333.71
Pre-University	$2,864.00	-	6,230.00[c,d]	$2,505.00	11,670.00
Journalism	724.00	-	1,315.00[d]	420.00	2,459.00
Rec. Leadership	550.00	-	176.00	345.00	1,071.00
Business Education	-	-	9,091.27[b]	-	9,091.27
Secretarial Science	1,394.00	-	845.00	1,085.00	3,324.00
Business Admin.	703.00	-	663.00	819.00	2,185.00
Tech.-Voc. Education	-	-	6,400.63[b]	-	6,400.63
Cooking	2,500.00	-	250.00	330.00	3,080.00
Welding	4,350.00	-	250.00	535.00	5,135.00
Automotive	2,630.00	-	250.00	875.00	3,755.00
Voc. Agriculture	1,643.00	-	250.00	165.00	2,058.00
Electronics	786.00	-	250.00	330.00	1,366.00
Drafting	517.00	-	250.00	361.00	1,128.00
	$18,661.00	-	$32,779.61	$7,850.00	$59,065.61

[a] Includes Travel Allowances and Employee Benefits.

[b] Administrative release time of Director of School.

[c] Includes Laboratory Assistant's salary.

[d] Includes Marker's salary.

Source: Bursar, Lethbridge Junior College.

TABLE XXXV

FACULTY AND COURSE WORKLOAD DATA

LETHBRIDGE JUNIOR COLLEGE

Faculty Member	Annual Salary	Activity	Percentage of Time
101	$14,074.92	Social Studies 130	55.0
		Administration	45.0
102	10,800.00	Recreation 100	20.0
		Recreation 101	13.0
		Recreation 102	13.0
		Recreation 200	11.0
		Recreation 204	8.0
		Recreation 205	10.0
		Recreation 207	9.0
		Intramurals	16.0
103	9,900.00	English 100	18.0
		English 133	18.0
		English 160	28.0
		English 229	36.0
104	11,250.00	Mathematics 90	20.00
		Mathematics 132	20.00
		Physics 132	46.0
		Business Knowledge 106	14.0
105	11,250.00	English 90	37.0
		English 130	63.0
106	12,150.00	Physics 90	13.0
		Physics 130	60.0
		Science 108	14.0
		Science MMP[a]	13.0
107	9,900.00	French 85	35.0
		French 90	32.0
		French 130	25.0
		Design 131	8.0
108	12,600.00	Chemistry 90	42.0
		Chemistry 130	58.0
109	9,900.00	Mathematics 107	17.7
		Mathematics 114	5.9
		Mathematics 130	53.0
		Welding App. Mathematics[a]	13.2
		Mechanics App. Mathematics[a]	10.2
110	8,949.96	Biology 90	58.0
		Biology 130	42.0

TABLE XXXV (continued)

Faculty Member	Annual Salary	Activity	Percentage of Time
111	$10,800.00	History 100	20.0
		History 200	20.0
		Journalism 100	15.0
		Journalism 101	15.0
		Journalism 200	17.5
		Journalism 201	12.5
112	11,250.00	Mathematics 80	33.3
		Mathematics 90	33.3
		Mathematics 131	33.4
113	9,750.00	Mathematics 85	34.0
		Science 85	32.0
		Physics 90	34.0
114	12,724.92	Mathematics 90	13.4
		Business Knowledge 100	4.3
		Drafting 130	32.0
		Administration	50.3
115	9,750.00	Circulation Theory 132	29.5
		Electricity 131	20.5
		Electricity 130	29.5
		Electricity 131	20.5
116	9,750.00	Machine Shop 100	10.0
	M	Machine Shop 132	15.0
		Machine Theory 133	9.0
		Auto Machine Shop[a]	34.5
		Automotives 102	21.5
		Drafting 130	10.0
117	9,750.00	Science 80	32.0
		Electricity 100	25.0
		Applied Services 102	43.0
118	9,349.92	Welding 100	13.0
		Welding 102	75.0
		Welding 104	12.0
119	9,349.92	Automotives 100	41.0
		Automotives 102	59.0
120	9,349.92	Automotives 100	30.0
		Automotives 102	70.0
121	8,550.00	Foods C-100	23.4
		Kitchen C-102	70.3
		Kitchen C-112	6.3

TABLE XXXV (continued)

Faculty Member	Annual Salary	Activity	Percentage of Time
122	$13,175.76	Note Taking 116	11.0
		English 110	20.0
		Administration	69.0
123	8,149.92	Shorthand 210	13.0
		Shorthand 211	13.0
		Typing & Office Procedure 100	14.0
		Typing & Office Procedure 101	14.0
		Typing & Office Procedure 200	10.5
		Typing & Office Procedure 201	10.5
		Human Relations 168	25.0
124	9,900.00	Accounting 131	13.5
		Accounting 132	14.0
		Cost Accounting 238	15.0
		Marketing 189	21.0
		Intro. Business 165	14.0
		Risk & Insurence 273	11.5
		Real Estate 274	11.0
125	9,349.92	Bookkeeping 123	17.5
		Shorthand 110	20.0
		Shorthand 111	21.5
		Typing & Office Procedure 100	11.5
		Typing & Office Procedure 101	12.0
		Typing & Office Procedure 200	8.5
		Typing & Office Procedure 201	9.0
126	9,900.00	Accounting 120	12.5
		Accounting 121	15.5
		Accounting 236	18.0
		Accounting 237	19.0
		Office Management 299	15.5
		Typing 106	5.0
		Business Law 166	14.5
127	10,800.00	Economics 151	16.0
		Economics 152	12.5
		Finance 271	16.0
		Finance 272	12.2
		Bookkeeping 122	31.0
		Business Mathematics 155	12.3
128	9,750.00	Accounting 131	19.0
		Accounting 132	13.5
		Retail Accounting 239	12.5
		Statistics 250	21.0
		Human Relations 268	34.0

TABLE XXXV (continued)

Faculty Member	Annual Salary	Activity	Percentage of Time
129	$ 9,750.00	Data Processing 140	8.0
		Data Processing 149	23.0
		Data Processing 245	20.4
		Human Relations 168	14.0
		Marketing 189	14.3
		Marketing 289	12.0
		Systems 246	8.3
130	11,700.00	Advertising 283	9.0
		Advertising 284	9.0
		Design 285	16.0
		English 103	21.0
		English 141	18.0
		Merchandise Administration 281	11.0
		Merchandise Administration 282	8.5
		Sales Administration 288	7.5
131	10,350.00	Psychology 100	16.7
		Sociology 100	16.7
		Counselling	66.6
132[b]	1,635.52	Business Knowledge C-103	100.0
133[b]	1,962.64	Sociology 100	100.0
134[b]	2,048.00	English 80	100.0
135[b]	1,088.00	Political Science 100	100.0
136[b]	517.56	Recreation 214	100.0
137[b]	1,920.00	Materials 132	30.0
		Structure 134	70.0
138[b]	5,299.20	Animal Science 105	20.0
		Farm Machinery 109	40.0
		Plant Science 107	40.0
139[b]	5,882.00	Agricultural Economics 223	60.0
		Soil Science 103	40.0
140	11,250.00	Data Processing 140	25.0
		Data Processing 141	25.0
		Data Processing 240	20.0
		Business Mathematics 150	30.0

TABLE XXXV (continued)

Faculty Member	Annual Salary	Activity	Percentage of Time
141	$ 9,349.92	Accounting 131	16.7
		Accounting 132	17.9
		Accounting 236	20.0
		Accounting 237	21.4
		Business Law 162	13.3
		Business Law 166	10.7
Total	$364,928.00		

Allocated to Instruction: $327,221.54 (Table IX).

Allocated to Administration, Counselling, etc.: $37,706.46.

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[a] Course not included in this study.

[b] Sessional Instructor.

Sources: Faculty Workload Survey, and Bursar, Lethbridge Junior College.

APPENDIX H

INPUT DATA, RED DEER JUNIOR COLLEGE

TABLE XXXVI

ACTUAL AND ESTIMATED EXPENDITURES FOR ADMINISTRATION RED DEER JUNIOR COLLEGE

Item	Amount
Salaries	$49,952.34
Supplies	8,385.29
Telephone/Telegram	3,632.87
Site Survey	3,826.56
Debenture Principal	22,000.00
Debenture Interest	24,180.00
Interest on Property	6,400.00
Interest on Capital Loans	15,871.88
Bank charges	275.13
Total	$134,524.07

Source: Bursar, Red Deer Junior College.

TABLE XXXVII

ACTUAL AND ESTIMATED EXPENDITURES FOR PHYSICAL PLANT RED DEER JUNIOR COLLEGE

Item	Amount
Salaries[a]	$ 7,500.00
Supplies	2,126.65
Utilities	22,264.76
Janitor & Security	19,874.06
Repair/Maintenance	3,126.89
Insurance	1,345.00
Total	$56,312.36

[a] Includes Plant Superintendent only.

Source: Bursar, Red Deer Junior College.

TABLE XXXVIII

ACTUAL AND ESTIMATED EXPENDITURES FOR COUNSELLING RED DEER JUNIOR COLLEGE

Item	Amount
Salaries[1]	$16,635.00
Total	$16,635.00

[1] Includes one faculty member and one-half clerk.

Source: Bursar, Red Deer Junior College.

TABLE XXXIX

ACTUAL AND ESTIMATED EXPENDITURES FOR LIBRARY RED DEER JUNIOR COLLEGE

Item	Amount
Salaries[1]	$33,612.42
Total	$33,162.42

[1] Includes two full-time Librarians and four clerks.

Source: Bursar, Red Deer Junior College.

TABLE XL

ACTUAL AND ESTIMATED EXPENDITURES FOR INSTRUCTIONAL CLERKS

Item	Amount
Salaries[1]	$7,260.00
Total	$7,260.00

[1] Includes two clerks.

Source: Bursar, Red Deer Junior College.

TABLE XLI

INDIRECT EXPENDITURES

RED DEER JUNIOR COLLEGE

Instructional Field	Supplies	Salaries	Total
All University Transfer Programs (except Nursing)	$13,640.73	-	$13,640.73
Chemistry	-	$1,306.00	1,306.00
Nursing Program	917.73	-	917.73
	$ 14,558.46	1,306.00	15,864.46

Source: Bursar, Red Deer Junior College.

TABLE XLII

FACULTY AND COURSE WORKLOAD DATA

RED DEER JUNIOR COLLEGE

Faculty Member	Annual Salary	Activity	Percentage of Total Time
101	$18,500.00	Administration	100.0
102	15,000.00	Administration	100.0
103	11,235.00	Counselling	100.0
104	14,658.96	English 200	36.0
		English 210	64.0
105	12,304.92	Phys. Ed. Program	50.0
		P.E. 218/228	50.0
106	11,764.96[a]	English 200	50.0
		English 210	50.0
107	9,630.00	Ed. Psych. 276	100.0
108	13,518.96	Geography 201	100.0
109	8,559.96	Phys. Ed. Program	50.0
		P.E. 218/228	50.0
110	7,950.00	Academic Upgrading	100.0
111	8,400.00	Academic Upgrading	100.0
112	7,459.92	Academic Upgrading	100.0
113	7,500.00	Academic Upgrading	100.0
114	17,229.00	Mech. Eng. 152/153	33.3
		Physics 200	33.3
		Physics 240	33.4
115	14,047.92	French 200	33.3
		French 201	33.3
		English 288	33.4

TABLE XLII (Continued)

Faculty Member	Annual Salary	Activity	Percentage of Total Time
116	$10,699.92	Economics 200	50.0
		Political Sci. 200	50.0
117	12,199.92	Chemistry 230	100.0
118	9,594.96	Biology 230	100.0
119	9,630.00	Phys. Ed. Program	50.0
		P.E. 218/228	50.0
120	9,810.00[b]	Mathematics 240	33.3
		Mathematics 243	16.7
		Mathematics 274	33.3
		Statistics 241	16.7
121	15,660.00	History 200	66.7
		Ed. Foundations 201	33.3
122	9,094.92	Nursing	100.0
123	11,600.00[a]	Business Admin. 110/111	27.0
		Business Admin. 130/131	27.0
		Business Admin. 140/141	24.0
		Economics 100/101	22.0
124	12,805.08	Mathematics 101	6.2
		Mathematics 180	26.0
		Mathematics 201	67.8
125	11,764.96[a]	Anthropology 202	50.0
		Sociology 202	50.0
126	7,489.92	Nursing	100.0
127	14,524.92	Nursing	100.0
128	9,060.00	Biology 130	26.0
		Biology 230	74.0
129	9,843.96	English 120	15.0
		English 210	85.0

TABLE XLII (Continued)

Faculty Member	Annual Salary	Activity	Percentage of Total Time
130	$12,984.00	Chemistry 250	50.0
		Chemistry 230	50.0
131	11,235.00	Nursing	100.0
132	8,559.96	Psychology 193	15.0
		Psychology 202	85.0
133	13,588.92	English 121	9.5
		English 200	55.5
		English 210	35.0
134	7,999.92	Library	100.0
135	11,700.00	Library	100.0
136[c]	1,440.00	Accounting 102	100.0
137[c]	4,867.00	Ed. Administration 261	100.0
Total:	$403,912.96		

Allocated to Programs (Instr. Sal.): $294,698.55 (Tables XV, XVI).

Allocated to Administration, Counselling, etc.: $109,214.41.

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[a] Includes Evening Credit Salary of $1,600.00.

[b] Includes Evening Credit Salary of $180.00.

[c] Sessional Instructor.

Sources: Faculty Workload Survey and Bursar, Red Deer Junior College.

APPENDIX I

PER PUPIL DIRECT COSTS OF PROGRAMS

MEDICINE HAT HUNIOR COLLEGE

Note: 1. One asterisk indicates the lowest cost per pupil arrangement of courses for each program, while two asterisks indicate the highest such arrangement.

2. The "per pupil" cost of Physical Education was computed by combining the input data for P.E. 218 and P.E. 228.

AGRICULTURE

Alta. (High) **

English 240	$ 68.08
Economics 200	97.53
Chemistry 250	241.55
Physics 200	165.42
Eng. Mech. 202	275.00
	$847.58

Alta. (Low) *

English 240	$ 68.08
Economics 200	97.53
Pol. Sc. 200	88.88
Math. 211	66.72
Biology 200	145.91
	$467.12

Sask.

English 240	$ 68.08
Chemistry 230	224.52
Math. 211	66.72
Biology 200	145.91
Economics 200	97.53
Physical Education	55.29
	$658.05

ARTS

Sask. (High)

English 240	$ 68.08
French 200	137.86
Chemistry 230	224.52
Economics 200	97.53
Psychology 202	59.29
Physical Education	55.29
	$642.57

Sask. (Low)

English 240	$ 68.08
French 200	137.86
Biology 200	145.91
History 205	36.60
Psychology 203	59.29
Physical Education	55.29
	$503.03

Alta. (High) **

English 240	$ 68.08
Drama 220	498.43
Chemistry	241.55
Eng. Mech. 202	275.00
Physics 200	165.42
Physical Education	55.29
	$1,303.77

Alta. (Low) *

English 240	$ 68.08
History 205	36.60
Math 211	66.72
Psychology 202	55.29
Economics 200	97.53
Physical Education	55.29
	$383.51

COMMERCE

Alta. (High) **

English 240	$ 68.08
Economics 200	97.53
Psychology 202	59.29
Math 211	66.72
Drama 220	498.43
Physical Education	55.29
	$845.34

Alta. (Low) *

English 240	$ 68.08
Economics 200	97.53
Math 211	59.29
Psychology 202	66.72
History 205	36.60
Physical Education	59.29
	$383.51

Calgary (High)

English 240	$ 68.08
Economics 200	97.53
Mathematics 211	66.72
Accounting 201	190.40
Chemistry 250	241.55
	$664.28

Calgary (Low)

English 240	$ 68.08
Economics 200	97.53
Mathematics 211	66.72
Accounting 201	190.40
French 200	137.86
	$560.59

Sask.

English 240	$ 68.08
Economics 200	97.53
Psychology 202	59.29
Mathematics 211	66.72
History 205	36.60
Physical Education	55.29
	$383.51

DENTISTRY & MEDICINE

Alta. (High) **

English 240	$ 68.08
Chemistry 230	224.52
Physics 200	165.42
Drama 220	498.43
French 200	137.86
Physical Education	55.29
	$1,149.60

Alta. (Low) *

English 240	$ 68.08
Chemistry 230	224.52
Biology 200	145.91
Mathematics 211	66.72
Psychology 202	59.29
Physical Education	55.29
	$619.81

EDUCATION

Alta. (High) **

English 240	$ 68.08
Ed. Foundations 201	12.12
Ed. Admin. 261	17.23
Ed. Psychology 212	69.20
Drama 220	498.43
Eng. Mech. 202	275.00
Physical Education	55.29
	$927.35

Alta. (Low) *

English 240	$ 68.08
Ed. Foundations 201	12.12
Ed. Admin. 261	17.23
Ed. Psychology 212	69.20
Mathematics 211	66.72
History 205	36.60
Physical Education	55.29
	$325.24

Sask. (High)

English 240	$ 68.08
Economics 200	97.53
History 205	36.60
Eng. Mech. 202	275.00
French 200	137.86
Physical Education	55.29
	$670.36

Sask. (Low)

English 240	$ 68.08
Economics 200	97.53
History 205	36.60
Mathematics 211	66.72
Biology 200	145.91
Physical Education	55.29
	$470.11

ENGINEERING

Calgary (High) **

English 240	$ 68.08
Physics 240	165.42
Chemistry 230	224.52
Mathematics 211	66.72
Eng. Mech. 202	275.00
	$799.74

Calgary (Low) *

English 240	$ 68.08
Physics 240	165.42
Chemistry 230	224.52
Mathematics 211	66.72
Economics 200	97.53
	$622.27

Alta. **

English 240	$ 68.08
Physics 240	165.42
Chemistry 230	224.52
Mathematics 211	66.72
Eng. Mech. 202	275.00
	$799.74

HOUSEHOLD ECONOMICS

Alberta (Low) **

English 240	$68.08
Chemistry 250	241.55
Drama 220	498.43
French 200	137.86
Economics 200	97.53
Physical Education	55.29
	$1,098.74

Alberta (Low) *

English 240	$ 68.08
Chemistry 250	241.55
Mathematics 211	66.72
History 205	36.60
Economics 200	97.53
Physical Education	55.29
	$565.77

Saskatchewan

English 240	$ 68.08
Chemistry 230	224.52
Biology 200	145.91
Psychology 202	59.29
Economics 200	97.53
	$595.33

LAW

Alberta (High)

English 240	$ 68.08
French 200	137.86
Eng. Mech. 202	275.00
Economics 200	97.53
History 205	36.60
Physical Education	55.29
	$670.36

Alberta (Low) *

English 240	$ 68.08
French 200	137.86
Mathematics 211	66.72
Economics 200	97.53
History 205	36.60
Physical Education	55.29
	$462.08

Saskatchewan (High) **

English 240	$ 68.08
French 200	137.86
Eng. Mechanical202	275.00
Economics 200	97.53
Psychology 202	59.29
Physical Education	55.29
	$693.05

Saskatchewan (Low)

English 240	$ 68.08
French 200	137.86
Biology 200	145.91
History 205	36.60
Psychology 202	59.29
Physical Education	55.29
	$503.03

NURSING

Alberta *[1]	
English 240	$ 68.08
Chemistry 250	241.55
Psychology 202	59.29
Biology 200	145.91
	$514.83

Saskatchewan **	
English 240	$68.08
Chemistry 230	224.52
Biology 200	145.91
Psychology 202	59.29
Economics 200	97.53
Physical Education	55.29
	$650.62

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[1] Prescribed program requires one additional course which is not offered at the College.

PHARMACY

Alberta (High) **	
English 240	$ 68.08
Biology 200	145.91
Chemistry 230	224.52
Chemistry 250	241.55
Physics 200	165.42
Physical Education	55.29
	$900.77

Saskatchewan (High)	
English 240	$ 68.08
Chemistry 230	224.52
Biology 200	145.91
Physics 200	165.42
French 200	137.86
Physical Education	55.29
	$797.08

Saskatchewan (Low) *	
English 240	$68.08
Chemistry 230	274.52
Biology 200	145.91
Physics 200	165.42
History 205	36.60
Physical Education	55.29
	$695.82

PHYSICAL EDUCATION

Alberta (High) **

English 240	$68.08
Psychology 202	59.29
Eng. Mechanical 202	275.00
Drama 220	498.43
Physical Education 203	49.90
Physical Education 204	125.76
Physical Education 205	49.90
Physical Education 311	47.50
	$1,173.86

Alberta (Low)

English 240	$68.08
Psychology 202	59.29
Biology 200	145.91
Mathematics 211	66.72
Physical Education 203	49.90
Physical Education 204	125.76
Physical Education 205	49.90
Physical Education 311	47.50
	$613.06

Saskatchewan *

English 240	$ 68.08
French 200	137.86
Biology 200	145.91
Economics 200	97.53
Mathematics 211	66.72
Physical Education	55.29
	$571.39

SCIENCE

Saskatchewan (High)

English 240	$ 68.08
French 200	137.86
History 205	36.60
Chemistry 230	224.52
Physics 200	165.42
	$633.48

Saskatchewan (Low)

English 240	$68.08
French 200	137.86
History 205	36.60
Mathematics 211	66.72
Biology 200	145.91
	$455.17

Alberta (High) **

English 240	$ 68.08
Drama 220	498.43
Chemistry 250	241.55
Eng. Mech. 202	275.00
Physics 200	165.42
Physical Education	55.29
	$1,303.77

Alberta (Low) *

English 240	$ 68.08
History 205	36.60
Mathematics 211	66.72
Psychology 202	59.29
Economics 200	97.53
Physical Education	55.29
	#383.51

SECRETARIAL DIPLOMA

Year #1 (High)

Sec. Science 101/102	$231.93
Sec. Science 111/112	356.25
B.A. 142	47.71
Sec. Procedure	118.23
English 111	93.37
Drama 220	498.47
	$1,345.92

Year #1 (Low) *

Sec. Science 101/102	$231.93
Sec. Science 111/112	356.25
B.A. 142	47.71
Sec. Procedure	118.23
English 111	93.37
Mathematics 211	66.72
	$914.21

Year #2 (High) **

Sec. Science 101/102	$231.93
Sec. Science 111/112	356.25
Sec. Science 230/231	203.43
Shorthand 211/212	937.04
B.A. 141	34.12
Drama 220	498.43
	$2,261.20

Year #2 (Low)

Sec. Science 101/102	$231.93
Sec. Science 111/112	356.25
Sec. Science 230/231	203.43
Shorthand 211/212	937.04
B.A. 141	34.12
Mathematics 211	66.72
	$1,829.49

SECRETARIAL SCIENCE CERTIFICATE

Sec. Science 101/102	$231.93
Sec. Science 111/112	356.25
Sec. Science 230/231	203.43
Sec. Procedure	118.23
B.A. 142	47.71
English 111	93.37
	$1,050.92

APPENDIX J

PER PUPIL DIRECT COSTS OF PROGRAMS

LETHBRIDGE JUNIOR COLLEGE

SCHOOL OF BUSINESS EDUCATION

Business Administration (Yr. 1)

Minimum		Maximum	
English 103	$ 42.70	English 103	$ 42.70
Accounting 131/132	144.05	Accounting 131/132	144.05
Economics 151/152	57.51	Economics 151/152	57.51
Intra. Business 165	26.72	Intra. Business 165	26.72
English 141	40.01	English 141	40.01
Marketing 189	60.61	Marketing 189	60.61
Business Law 166	43.25	Business Law 166	43.25
Data Processing 149	41.07	Data Processing 149	41.07
Bus. Mathematics 155	27.42	Bus. Mathematics 155	27.42
Typing 106	15.65	Psychology 100	65.58
	$498.99		$548.92

Business Administration (Yr. 2)

Finance		Marketing	
Accounting 236/237	$314.88	Advertising 283	$ 56.48
English 229	66.56	Advertising 284	56.48
Finance 271	222.34	Design 285	104.86
Finance 272	152.74	English 229	66.56
Human Relations 268	66.74	Human Relations 268	66.74
Real Estate 274	142.46	Marketing 289	62.05
Risk & Insurance 273	148.65	Merchandising 281/282	126.30
Statistics 250	45.71	Retail Acct. 239	67.28
Systems 246	96.25	Sales Admin. 288	55.09
		Statistics 250	45.71
	$1,256.33		$707.55

Business Administration (Yr. 2)

Office Administration

Accounting 236/237	$314.88
Cost Accounting 238	99.15
English 229	66.56
Human Relations 268	66.74
Office Management 299	91.59
Statistics 250	45.71
Systems 246	96.25
	$780.88

Secretarial Science

Accounting Option

Minimum		Maximum	
Accounting 120/121	$130.60	Accounting 120/121	$130.60
Business Law 162	22.08	Business Law 162	22.08
Bus. Mathematics 150	49.61	Bus. Mathematics 150	49.61
Data Processing 140	265.18	Data Processing 240	1,133.57
English 110	43.98	English 110	43.98
Human Relations 168	51.70	Human Relations 168	51.70
Notetaking 116	34.46	Notetaking 116	34.46
Typing & O.P. 200/201	97.18	Typing & O.P. 100/101	146.99
	$694.79		$1,612.99

Secretarial Science

Data Processing Option

Minimum		Maximum	
Bookkeeping 122	$124.02	Bookkeeping 122	$124.02
Business Law 162	22.08	Business Law 162	22.08
Bus. Mathematics 150	49.61	Mathematics 150	49.61
Data Processing 140	265.18	Data Processing 240	1,133.57
Data Processing 245	70.73	Data Processing 245	70.73
English 110	43.98	English 110	43.98
Human Relations 168	51.70	Human Relations 168	51.70
Notetaking 116	34.46	Notetaking 116	34.46
Typing & O.P. 200/201	97.18	Typing & O.P. 100/101	146.99
	$758.94		$1,677.14

Shorthand Option

Minimum		Maximum	
Bookkeeping 123	$ 31.14	Bookkeeping 123	$ 31.14
Business Law 162	22.08	Business Law 162	22.08
Bus. Mathematics 150	49.61	Bus. Mathematics 150	49.61
Data Processing 140	265.18	Data Processing 240	1,133.57
English 110	43.98	English 110	43.98
Human Relations 168	51.70	Human Relations 168	51.70
Typing & O.P. 200/201	97.18	Typing & O.P.100/101	146.99
Shorthand 110/111	162.19	Shorthand 210/211	245.90
	$723.06		$1,724.97

SCHOOL OF LIBERAL EDUCATION

Pre-University

Remedial		Grade 10	
Mathematics 80	$171.42	Mathematics 85	$109.82
Science 80	208.13	Science 85	19.38
English 80	90.34	French 85	263.92
	$469.89		$564.12

Grade 11

Minimum		Maximum	
English 90	$113.99	Biology 90	$243.63
Mathematics 90	130.44	Chemistry 90	275.12
Physics 90	143.61	French 90	279.33
	$388.04		$1,337.39

Grade 12

Minimum		Maximum	
Biology 130	$114.89	Chemistry 130	$270.46
English 130	100.14	French 130	290.33
Mathematics 130	92.56	Physics 130	232.15
	$307.59		$792.94

Journalism (Yr. 1)		Journalism (Yr. 2)	
English 160	$ 93.84	Economics 151/152	$ 57.51
History 100	227.18	English 229	66.56
Journalism 100	173.18	History 200	251.46
Journalism 101	173.18	Journalism 200	221.46
Political Science 100	118.57	Journalism 201	161.46
Psychology 100	65.58	Sociology 100	51.32
	$851.53		$809.77

Recreational Leadership (Yr. 1)

English 160	$ 93.84
Psychology 100	65.58
Recreation 100	108.81
Recreation 101	75.94
Recreation 102	75.94
Recreation 207	103.26
Recreation 214	34.11
	$557.48

Recreational Leadership (Yr. 2)

Minimum		Maximum	
English 229	$ 66.56	English 229	$ 66.56
Psychology 100	65.58	History 200	251.46
Recreation 200	122.90	Recreation 200	122.90
Recreation 204/205	191.62	Recreation 204/205	191.62
Recreation 207	103.62	Recreation 207	103.62
Recreation 214	34.11	Recreation 214	34.11
Sociology 100	51.32	Sociology 100	51.32
	$635.35		$821.23

SCHOOL OF TECHNOLOGY

Automotives		Cooking	
Auto. Theory 100	$438.45	Bus. Knowledge C-103	$114.87
Auto. Shop 102	789.93	Bus. Math. 114	29.34
English 100	190.85	Food C - 100	139.37
Mathematics 90	130.44	Food C - 102	299.77
Physics 90	143.61	Kitchen C - 112	92.89
	$1,693.28		$676.24

Drafting	
Design 131	$ 88.41
Drafting 130	420.61
English 133	106.44
Machine Shop 132	97.28
Mechanical Theory 133	124.94
Materials 132	125.99
Mathematics 132	125.15
Physics 132	204.32
Structure 134	251.31
	$1,544.45

Electronics	
Circ. Theory 132	$297.22
Electricity 131	160.71
Electricity 130	215.55
Electricity 134	234.00
English 133	106.44
Mathematics 132	125.15
Physics 132	204.32
	$1,343.39

Vocational Agriculture (Yr. 2)	
Ag. Economics 223	$ 340.02
Animal Science 105	134.24
Farm Machinery 109	222.56
Plant Science 107	222.56
Soil Science 103	213.63
	$1,133.01

Welding	
Welding 100	$179.32
Welding 102	484.42
Mathematics 114	29.34
	#693.08

APPENDIX K

PER PUPIL DIRECT COSTS OF PROGRAMS

RED DEER JUNIOR COLLEGE

AGRICULTURE

Minimum		Maximum	
English 200	$189.50	English 210	$215.83
Economics 200	68.33	Economics 200	68.33
Mathematics 240	110.28	Mathematics 240	110.28
Statistics 241	140.85	Statistics 241	140.85
Chemistry 230	172.98	Chemistry 230	172.98
Psychology 202	58.07	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$799.24		$1,156.82

ARCHITECTURE

Minimum		Maximum	
English 200	$189.50	English 210	$215.83
Mathematics 201	134.51	French 201	366.68
Physics 240	140.65	Mathematics 207	134.51
Psychology 202	58.07	Physics 200	389.32
Sociology 202	63.31	Physics 240	140.66
Physical Education	59.23	Physical Education	59.23
	$645.28		$1,306.23

ARTS

Minimum		Maximum	
Biology 130	$119.01	English 210	$215.83
Economics 200	68.33	French 201	366.68
English 200	215.83	Geography 201	288.48
Psychology 202	58.07	Chemistry 250	275.58
Sociology 202	63.31	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$583.78		$1,593.12

BUSINESS ADMINISTRATION

Accounting 102	$78.83
Bus. Administration 110/111	141.83
Bus. Administration 130/131	141.83
Bus. Administration 140/141	126.83
Economics 100/101	116.83
English 120	56.05
English 121	74.78
Physical Education	59.23
	$796.21

COMMERCE

Minimum		Maximum	
Economics 200	$ 68.33	Economics 200	$68.33
English 200	189.50	English 210	215.83
Mathematics 240	110.28	Mathematics 240	114.05
Mathematics 243	114.05	Mathematics 243	114.05
Psychology 202	58.07	Physics 200	389.32
Sociology 202	63.31	Psychology 202	58.07
Physical Education	59.23	Physical Education	59.23
	$662.77		$1,015.11

EDUCATION

Minimum		Maximum	
Ed. Foundations 201	$ 74.56	Chemistry 250	$275.58
Ed. Administration 261	72.88	Ed. Foundations 201	74.56
Ed. Psychology 276	136.97	Ed. Admin. 261	72.88
English 200	189.50	Ed. Psychology 276	136.97
Political Sci. 200	131.25	English 210	215.83
Psychology 202	58.07	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$722.46		$1,224.37

ENGINEERING

Minimum		Maximum	
Chemistry 230	$172.98	Chemistry 230	$172.98
Economics 200	68.33	Economics 200	68.33
English 200	189.50	English 210	215.83
Mathematics 201	134.51	Mathematics 201	134.51
Mechanics 152/153	245.89	Mechanics 152/153	245.89
Physics 240	140.66	Physics 240	140.66
Physical Education	59.23	Physical Education	59.23
	$1,011.10		$1,037.43

HOME ECONOMICS

Minimum		Maximum	
Chemistry 250	$275.58	Chemistry 250	$275.58
Economics 200	68.33	Economics 200	68.33
English 200	189.50	English 210	215.83
Psychology 202	58.07	French 201	366.68
Sociology 202	63.31	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$714.02		$1,374.97

LAW

Minimum		Maximum	
Economics 200	$ 68.33	English 200	$189.50
English 200	189.50	French 200	240.73
French 200	240.73	History 200	190.08
Mathematics 240	110.28	Physics 200	389.32
Political Science 200	131.25	Political Science 200	131.25
Physical Education	59.23	Physical Education	59.23
	$799.32		$1,200.11

NURSING (B.SC.)

Minimum		Maximum	
Biology 130	$119.01	Biology 230	$178.41
Chemistry 250	275.58	Chemistry 250	275.58
English 200	189.50	English 210	215.83
Psychology 202	58.07	Psychology 202	58.07
Sociology 202	63.31	Sociology 202	63.31
Physical Education	59.23	Physical Education	59.23
	$764.70		$850.43

PHARMACY

Minimum		Maximum	
Biology 130	$119.01	Biology 230	$178.41
Chemistry 230	172.98	Chemistry 230	172.98
Chemistry 250	275.58	Chemistry 250	275.58
English 210	215.83	English 210	215.83
Physics 200	389.32	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$1,231.95		$1,291.35

PHYSICAL EDUCATION

Minimum		Maximum	
Chemistry 230	$172.98	Chemistry 250	$275.58
English 200	189.50	English 210	215.83
Political Science 200	131.25	Geography 201	288.48
Psychology 202	58.07	Psychology 202	58.07
Sociology 202	63.31	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$674.34		$1,286.51

PRE-MEDICINE

Minimum		Maximum	
Biology 230	$178.41	Chemistry 230	$172.98
Chemistry 230	172.98	English 210	215.83
English 200	189.50	Geography 201	288.48
Psychology 202	58.07	French 201	366.68
Sociology 202	63.31	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$721.50		$1,492.52

PRE-VETERINARY

Minimum		Maximum	
Biology 130	$119.01	Biology 230	$178.41
Chemistry 230	172.98	Chemistry 230	172.98
Economics 200	68.33	English 210	215.83
English 200	189.50	French 201	366.68
Mathematics 240	110.28	Mathematics 240	110.28
Statistics 241	140.85	Statistics 241	140.85
Physical Education	59.23	Physical Education	59.23
	$860.18		$1,244.26

RECREATIONAL ADMINISTRATION

Minimum		Maximum	
Economics 200	$ 68.33	English 210	$215.83
English 200	189.50	French 201	366.68
Political Science 200	131.25	Physics 200	389.32
Psychology 202	58.07	Psychology 202	58.07
Sociology 202	63.31	Sociology 202	63.31
Physical Education	59.23	Physical Education	59.23
	$569.69		$1,152.44

SCIENCE

Minimum		Maximum	
Biology 130	$119.01	English 210	$215.83
Economics 200	68.33	French 201	366.68
English 200	215.83	Geography 201	288.48
Psychology 202	63.31	Physics 200	389.32
Physical Education	59.23	Physical Education	59.23
	$583.78		$1,593.12

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